

Journal

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

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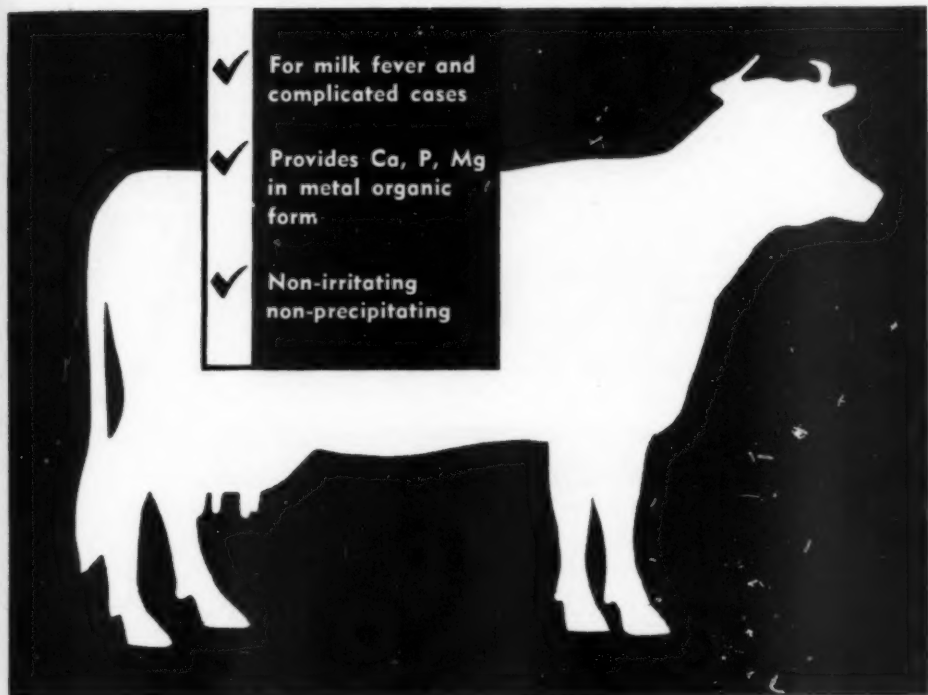
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Correspondence

January 21, 1959

Dear Dr. Aitken:

I am writing you concerning the change of the name of the organism *Erysipelothrix rhusiopathiae* to *Erysipelothrix insidiosus* which appears in the 7th edition of "Bergey's Manual of Determinative Bacteriology." Secondly, Trevisan, 1885, is credited with describing the organism. A more comprehensive review of the literature shows that Pasteur and Dumas observed the organism in swine in 1882, and Pasteur and Thuiller vaccinated swine against this disease in 1883 using the organism. Thirdly, I have never observed acid production in maltose in any of my fermentative studies.

In fairness to Pasteur and his colleagues, I think he should be credited with discovering and identifying the organism. May I suggest that someone who is familiar with the various pathogenic organisms in domestic livestock be consulted before final decisions are made concerning changing of names, etc. I hope you can correct this injustice.

Sincerely yours,
s/DENNIS SIKES, Head
Department of Pathology and Parasitology
University of Georgia
Athens, Ga.

[See abstract "Another Swine Erysipelas Vaccine" on page 161 of this issue.]—ED.

• • •

January 19, 1959

Dear Sir:

I am writing this letter to you in hopes of determining if any attempt has been made by our Association or by any group of veterinarians to organize a flying club. The American Medical Association has had such a club for the past four years. In recent years I am sure many veterinarians have purchased and are flying airplanes for pleasure and for business.

I own an airplane which is used for both busi-

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ness and pleasure purposes. I wonder if the JOURNAL would be interested in pursuing this subject toward a possible future flying organization for our profession.

In the past, several veterinarians have flown their planes to national conventions. Perhaps this would be an opportune time to meet with interested prospective members. I would appreciate your response to this letter and also any suggestions or comments which you may have on this subject.

Sincerely yours,
s/D. L. PAICE
P.O. Box 783
Hagerstown, Md.

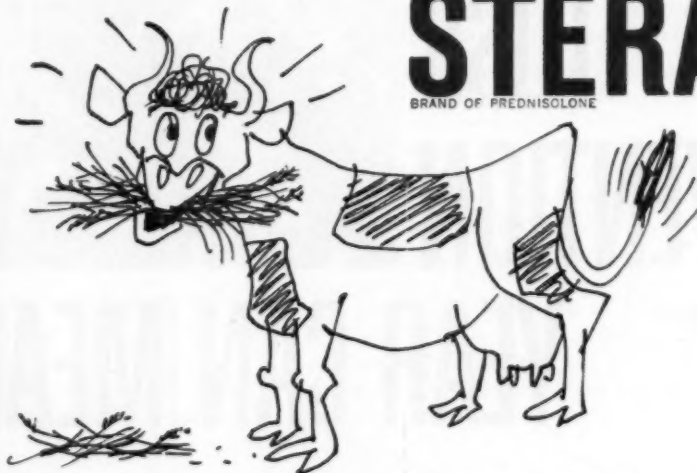
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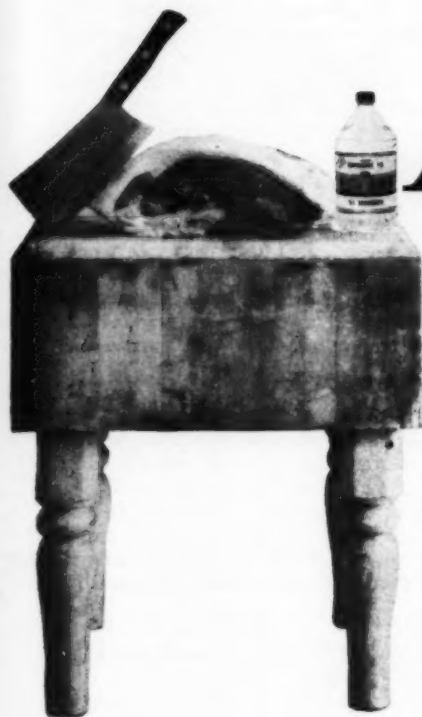


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Legislative.—U.S.D.A. budget submitted to Congress for fiscal year 1960 included \$64,240,000 for all direct research ARS under salaries and expenses. Plant, animal disease and pest control: \$49,110,000 (latter includes \$15,538,000 for brucellosis program). Meat inspection: \$21,475,000. Total: \$134,825,000. Agricultural Marketing Service, poultry inspection: \$10,497,000.

Bills introduced in 86th Congress shortly after convening, which are of interest to our profession:

Tax Deferment—H.R. 9 and H.R. 10, by Rep. Simpson (R., Pa.) and Rep. Keogh (D., N.Y.), to encourage establishment of voluntary pension plans by the self-employed. **Both identical with Jenkins-Keogh bill** which passed the House last year. Numerous other bills introduced were similar or identical with above.

Miscellaneous Bills.—H.R. 2260, Rep. Vinson (D., Ga.), to extend until July 1, 1963, the induction provision of the **Universal Military Training and Service Act**; the provisions of the Act of 1950, suspending personnel strength of Armed Forces; and the **Dependents Assistance Act** of 1950. S.185, Sen. Hill (D., Ala.), to strengthen the Commissioned Corps. PHS, through revision and extending some provisions relating to retirement, appointment, and other related personnel matters. PHS commissioned officers, regular and reserve, would be entitled to retirement pay at the rate of 2½ per cent of basic pay for each year of active service. Medical and dental officers would, in addition, be credited with four years of service, and an additional year would be credited to a medical officer who had one year internship or equivalent. In general, the bill would correct an inequity pertaining to retirement for all categories of PHS reserve officers. **Note: The bill does not provide additional credit for retirement purposes for PHS veterinary officers.**

H.R. 127 and H.R. 309, by Rep. Mrs. Kee (D., W. Va.) and Rep. Abernethy (D., Miss.), respectively, among many introduced, **to create an Agricultural Research and Industrial Board**, and to define its powers and duties. H.R. 2200, Rep. Moss (D., Calif.), would establish a **system for classification and compensation of scientific and professional positions** in the Federal Government. H.R. 2857, Rep. Anfuso (D., N.Y.), to amend the Civil Service Retirement Act of 1930 **to permit retirement on full annuity** for officers and employees with 30 years or more service, without regard to age.

★ ★ ★

Miscellaneous items.—The National Advisory Committee to Selective Service System, Washington 25, D.C., in Memorandums No. 7 and No. 8, January 2 and January 19, respectively, advises members of the **Ready Reserve** on the staff or faculty of schools and hospitals in the entire medical health field, that **they will be expected to go when called and not be declared essential.** Memorandum No. 7 states, "If any such individuals are now in essential positions—either on staff or faculty—they should request transfer to the **Standby Reserve**; otherwise the Ready Reserve is not a Ready Reserve." By making such transfer they will, of course, lose pay. They will not lose credit toward retirement. The obligation of members of the Ready Reserve to serve when called also applies to those in private practice.

A Federal Advisory Council on Research and Technology, with representatives from all departments and agencies heavily involved in research, is being formed. **It will advise the President and department heads on legislation, but will not have operating authority.**

Atomic Energy Commission has a new program of direct financial assistance to colleges and universities for education and training in radioisotope principles and technology. Schools may obtain demonstration apparatus, student laboratory equipment, and training aids required to offer adequate laboratory work in radioisotope technology.



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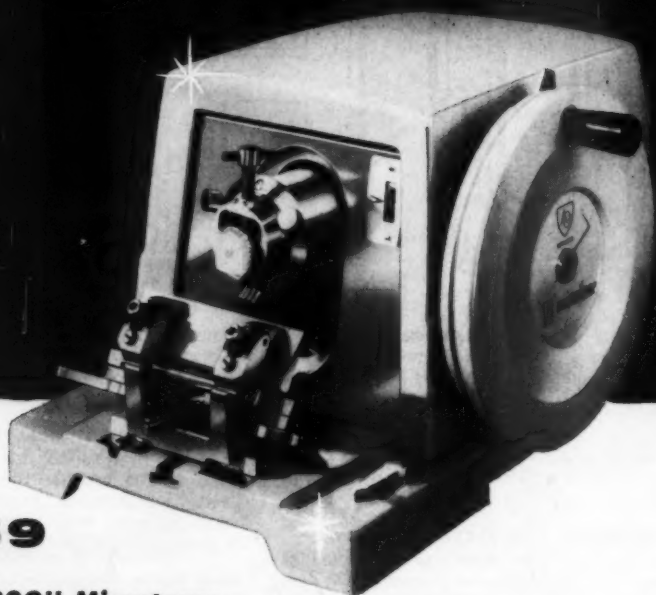


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^{*}Belloff, G. B.: *Calif. Vet.* 7:16 (Nov.-Dec.) 1955.

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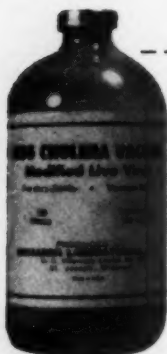
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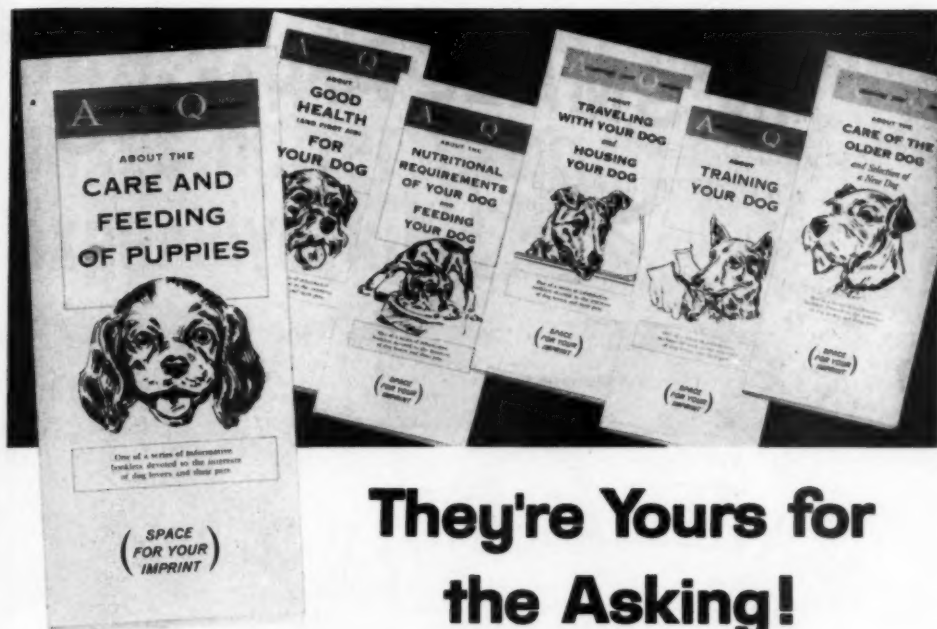
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The Immunization of Dairy Cattle Against Staphylococcal Mastitis

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Durham, New Hampshire

WHILE EFFECTIVE methods are now available for the control and eradication of bovine mastitis due to *Streptococcus agalactiae*, no real progress has been made in the treatment and control of staphylococcal mastitis. The incidence of staphylococcal mastitis in different areas apparently varies to a considerable extent but, in our experience, from 10 to 60 per cent or more of the cows in a herd may be infected with *Staphylococcus aureus*.

The infection due to this organism may be mild, nonclinical, or it may become clinical as manifested by abnormal secretion or by swelling of the gland and acute illness. Once the infection becomes established in a quarter, a chronic condition generally develops and acute stages of the infection may occur during a given lactation period. The various antibiotic agents so far tested have not proved effective for the elimination of this type of mastitis.

The present study was undertaken to establish the value of staphylococcal toxoids and bacterin-toxoids for the immunization of cows against staphylococcal mastitis. We were particularly interested in determining whether vaccination of cows with these agents would prevent the development of acute or clinical cases of staphylococcal mastitis, control its spread, or aid in the

recovery from early or subclinical cases of this type of mastitis.

REVIEW OF THE LITERATURE

A number of reports have appeared in the French literature on the attempted immunization of cows against staphylococcal mastitis.²⁻⁴ These investigators demonstrated that staphylococcal toxoid would stimulate the production of antitoxins in cows and that higher antitoxin levels were obtained when potassium alum or aluminum hydroxide were mixed with the toxoid. They felt that the toxoid should contain both *alpha* and *beta* antigens and also killed suspensions of staphylococci. The *alpha* antitoxin levels produced generally ranged from 40 to 60 international units (I.U.) per milliliter when tested about 15 days following the injections of such toxoids.

Considerable variation in the antibody response for different animals was reported, and cattle less than 6 months of age developed low antitoxin titers. These workers concluded that beneficial clinical and economic results were obtained in the control of staphylococcal mastitis following the use of their toxoid preparations. They also indicated that treatment of infected quarters with antibiotics was more effective for vaccinated cows.

Others⁵ published a preliminary report on the immunization of animals against *Micrococcus pyogenes*. They immunized rabbits with a bacterin-toxoid prepared in their own laboratory and also with a commercial staphylococcal toxoid. They demonstrated a protective effect with both preparations. Of 9 cows vaccinated with large doses of their bacterin-toxoid, 8 developed high titers of antihemolysins. Two weeks after vaccination, antihemolysin titers of 51 to 102 I.U. per milliliter were obtained. Eight weeks later, these titers decreased to 2 to 32 I.U. The severity of mastitis in 16 quarters of the vaccinated cows challenged with viable toxic cultures was less than the reaction in five quarters of unvaccinated cows. A chronic infection developed in nine of the 16 quarters of the vaccinated cows following challenge.

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MATERIALS AND METHODS

PREPARATION OF TOXOID
AND BACTERIN-TOXOID

Production of Toxins.—*Staphylococcus aureus* strain No. 7 isolated in our laboratory from a well-established case of staphylococcal mastitis was selected for the production of toxins. This strain produced *alpha*, *beta*, and *delta* toxins.

While a number of different mediums were tested for toxin production, a veal infusion broth proved most satisfactory for producing large amounts of potent toxins. This medium was prepared by infusing 2 lb. of ground veal in 2 liters of distilled water overnight in the refrigerator. The liquid was then obtained by pressing and draining through cheesecloth. Then 2 per cent tryptose and 0.5 per cent sodium chloride were added to the filtrate, the mixture heated at 50 C. for 30 min., and boiled for 15 min. This medium was next strained through absorbent cotton, the pH adjusted to 7.0 to 7.2, brought to a boil, filtered through filter paper, distributed in 50-ml. amounts in 250-ml. flasks, and sterilized.

Each flask was inoculated with 1 ml. of an 18-hr. broth culture of the *Staphylococcus* and incubated in jars in an atmosphere containing air and 20 per cent carbon dioxide at a temperature of 37 C. for 48 hours, with continual shaking.

Small amounts of potent toxin were also obtained in plates by use of a starch agar medium containing 2 per cent tryptose, 1 per cent proteose-peptone, 0.5 per cent glucose, 0.5 per cent sodium chloride, 0.5 per cent potassium monophosphate, 0.5 per cent potassium diphosphate, 0.2 per cent soluble starch, and 1.0 per cent agar at a pH of 7.2. One milliliter of the culture was spread over this medium in Petri dishes and the plates incubated as described previously, without agitation or mechanical shaking. The toxin was pressed from the agar through cheesecloth.

The bacterial cells were removed from the above cultures by centrifuging and finally by filtration through Selas filters No. 3.

Titration of Toxins.—The hemolytic and antigenic potency of the toxins were measured according to the methods outlined by the National Institutes of Health.¹

For the hemolytic potency tests of *alpha* toxin, a series of dilutions of the toxin was prepared and 1 ml. of each toxin dilution mixed with 1 ml. of a 1 per cent suspension of washed rabbit red cells. The mixture was shaken, incubated for one hour in a water bath at 37 C., and read, taking as the end point the highest dilution showing complete (4+) hemolysis. Since we were interested in including *beta* toxin in our toxoids, tests for the hemolytic potency of this toxin were also made. The procedure was similar to that used for the *alpha* toxins except washed sheep red cells were used in place of rabbit red cells and the mixtures read after incubation of the tubes at 37 C. for one hour and then overnight in the refrigerator.

To estimate the antigenic potency of the toxin,

the hemolytic test dose (Lh) was determined by mixing 0.5 ml. of various toxin dilutions with 1 unit of a control antitoxin contained in 0.5 ml. The tubes were allowed to stand for 20 min. at room temperature and 1 ml. of a 1 per cent suspension of rabbit cells was then added. The mixtures were next incubated for one hour in a 37 C. water bath and the end point taken as the toxin dilution which showed 50 per cent (2+) hemolysis. For the preparation of satisfactory toxoid, the toxin should have a hemolytic test dose of 0.075 ml. or less. The control antitoxin (standard *Staphylococcus* antitoxin) was obtained from the National Institutes of Health, Washington, D.C.

Preparation of Toxoids and Bacterin-Toxoids.—The sterile toxins were detoxified by the addition of 0.4 per cent formalin, by volume, and incubation at 39 C. until 1 ml. of the undiluted toxoid did not completely hemolyze 1 ml. of a 1 per cent suspension of rabbit cells after one hour's incubation at 37 C., and a 1 per cent suspension of sheep cells after incubation for one hour at 37 C. and overnight in the refrigerator. This usually required an incubation period of two to four weeks. After toxoiding, 0.5 per cent alum (potassium aluminum sulfate) was added. The bacterin-toxoids contained 3 billion heat- or formalin-killed staphylococci (strain No. 7) per milliliter. A commercial toxoid and bacterin-toxoid* prepared in a similar way were also used for some of our studies.

Tests for Antigenic Potency of Toxoids.—Rabbits were used to determine the antigenic potency of the toxoids. For this test, 8 albino rabbits whose serums contained less than 0.1 antitoxin unit per milliliter were injected intramuscularly with 1 ml. of the toxoid. One week later, they were given injections of 2 ml. and the following week 3 ml. of the toxoid. One week after the last dose, blood samples were taken and the antitoxin titers determined. All toxoids used in this study produced at least a 30-fold increase in antitoxin titers of the pooled rabbit serums.

DETERMINATION OF ANTITOXIN TITERS

The procedures recommended by the National Institutes of Health¹ were used for the titration of antitoxins. The serum to be tested was mixed with a toxin dilution sufficient to produce a 2+ hemolysis against 1 unit of the standard *Staphylococcus* antitoxin. This dilution was determined by preliminary testing each day. In testing a serum, a series of multiple dilutions was prepared ranging from 1:2 to 1:256. To each 0.5 ml. of serum dilution, 0.5 ml. of the standard toxin was added, mixed, and allowed to stand at room temperature for 20 min. After adding 1 ml. of a 1 per cent suspension of rabbit cells, the mixture was incubated in a water bath at 37 C. for one hour, and the degree of hemolysis recorded. Two controls were run, one consisting of 1 ml. of red cells plus 1 ml. of saline solution, the other, 1 unit (contained in 0.5 ml.) of the standard antitoxin plus

*Supplied through the courtesy of Lederle Labs. Division, American Cyanamid Co., Pearl River, N.Y.

0.5 ml. of the toxin dilution and 1 ml. of rabbit red cells. The latter tube should show 2+ hemolysis. The end point in titrating an unknown serum was the tube giving the same degree of hemolysis as the control tube. This dilution was multiplied by two to obtain the value in units per milliliter.

PROCEDURE FOR EVALUATING THE IMMUNE RESPONSE OF CATTLE TO STAPHYLOCOCCAL TOXOID AND BACTERIN-TOXOID

The studies were made on cows in herds with a high incidence of staphylococcal mastitis. The cows in these herds had been tested for mastitis at monthly intervals for about seven years. They were free from *Str. agalactiae* mastitis. For the diagnosis of staphylococcal mastitis, quarter samples were incubated for 16 to 18 hours and then cultured on sheep blood agar. Leukocyte counts per milliliter for each sample were determined and, at periodic intervals, unincubated samples were also cultured on blood agar. The procedures used were similar to those outlined.¹⁰

Before injection of the toxoid or bacterin-toxoid, blood samples were collected from all cows to determine normal antitoxin titers. Each cow to be treated was then vaccinated intramuscularly with 5 or 10 ml. of the toxoid or with 10 ml. of the bacterin-toxoid. Two or three such injections were given at four-week intervals. For some animals, a booster injection of the agents was given six months after the first vaccinations. Approximately one half of the cows in the herds were used as unvaccinated controls. Following the injections, blood samples were collected at two-week intervals for one month and thereafter at one-month intervals to determine antitoxin titers. Milk samples were also tested for mastitis at one-month intervals. Beside the laboratory tests, accurate records were kept of all clinical or acute cases of mastitis developing in these herds.

RESULTS

EXPERIMENT 1

Vaccination with Toxoids.—These studies were made in cows housed in two barns in a dairy herd maintaining 160 lactating Holstein-Friesian cows. Similar herd management practices were maintained for cows housed in the different barns and the cows were milked in the same milking parlor. The incidence of staphylococcal mastitis was approximately the same for the cows in both barns. Of 40 cows in one barn, 16 were vaccinated with a staphylococcal toxoid (toxoid A) prepared in our laboratory, 15 cows with the commercial toxoid (toxoid B), and 9 were used as controls. Of the 60 cows housed in a second barn, records were available for 30 over the 18-month test period and these were also used as nonvaccinated controls.

The vaccinated cows were given two or three intramuscular injections of 5 ml. of toxoid at four-week intervals and one booster injection of 5 ml. of toxoid B six months later. The toxin used for the production of toxoid A from *Staph. aureus* strain No. 7 before inactivation with formalin had a hemolytic titer of 1:2,048 for α toxin and 1:1,024 for β toxin.

The diagnosis of staphylococcal mastitis in a given quarter was based on the presence of hemolytic, coagulase-positive staphylococci in incubated samples of milk collected at two consecutive monthly intervals. In all quarters classed as infected, the milk also contained 1 million or more leukocytes per milliliter and staphylococci were generally present when the unincubated milk was cultured on blood agar. The infection was classed as acute if hemolytic, coagulase-positive staphylococci were present in the milk samples and the milk was abnormal or the udder swollen.

There was a significant difference in the number of infected quarters and acute cases of staphylococcal mastitis between the vaccinated and the nonvaccinated cows (table 1). In the total group of cows given toxoid preparations, 20 (16.0%) of 124 quarters were infected prior to vaccination and 18 (14.1%) of the quarters were infected at the end of the 18-month test period. In the control cows in the same barn, 6 (16.6%) of 36 quarters were infected at the start of the experiment and 18 (50.0%) at the end of the 18-month test period. The number of infected quarters increased from 13.3 per cent to 28.3 per cent in the control cows in barn 2. During the 18-month test period, 17 acute infections occurred in the 31 vaccinated cows, 33 acute infections in the 9 nonvaccinated cows in barn 1, and 46 acute cases in the 30 nonvaccinated cows in barn 2. Some of the same quarters may have had more than one acute flare-up during the test period. All quarters showing abnormal milk or swelling of the gland during this period were treated with antibiotics.

Two to eight weeks after vaccination with the staphylococcal toxoids, there was a definite increase in the α antitoxin titers of the blood. The titers ranged from 16 to 96 units of antitoxin per milliliter of serum for different cows. The antitoxin titer returned to about the normal level in many cows after six months to one year. It should be pointed out that many cows

TABLE 1—Results of Vaccination of Cattle with Staphylococcal Toxoid

Vaccination procedure*	No. of cows in group	Av. normal antitoxin titer**	Av. antitoxin titer after vaccination		No. infected quarters prior to vaccination	No. infected quarters at end of 18 mo.	Acute infections during 18 mo.
			(1 mo.)	(6 mo.)			
2 injections toxoid A	8	6	18	14	7	3	6
3 injections toxoid A	8	10	34	20	4	4	2
2 injections toxoid B	7	10	45	15	3	6	3
3 injections toxoid B	8	9	21	16	6	5	6
Control cows—barn 1	9	9	8	10	6	18	33
Control cows—barn 2	30	10	9	9	16	34	46

*All vaccinated cattle were inoculated intramuscularly with 5 ml. of the toxoid at four-week intervals and given a booster injection of 5 ml. of toxoid B six months after the initial injections; **the antitoxin titers listed are given in international units per milliliter for alpha antitoxin.

with chronic cases of staphylococcal mastitis of six months' or more duration were included in the experimental group. The normal antitoxin titers of such animals usually ranged from 6 to 12 units per milliliter.

EXPERIMENT 2

Vaccination of Pregnant Heifers with Toxoid.—Eight pregnant heifers in the herd used in experiment 1 were vaccinated with 10 ml. of toxoid B about four to six weeks before calving and were given a similar injection four months later. These animals were also tested for antitoxin levels and for evidence of staphylococcal mastitis over an 18-month period. Four unvaccinated pregnant heifers entering the herd at the same time, and housed and milked under the same conditions, were used as controls. All were negative for staphylococcal mastitis at the start of the test but, at the end of the 18-month period, 1 of the 8 vaccinated cows had staphylococcal mastitis (2 quarters) while 3 of the 4 control cows (4 quarters) were positive for staphylococcal mastitis.

During this period, there were no acute cases due to staphylococcal mastitis in the 8 vaccinated cows and ten acute flare-ups in the 4 control animals. Before vaccination, the *alpha* antitoxin levels generally averaged 2 units per milliliter or less; two weeks after the second injection of the toxoid, the levels ranged from 12 to 24 units per milliliter.

EXPERIMENT 3

Vaccination with Bacterin-Toxoid.—(A) Since there is evidence that the addition of bacterial cells to fluid toxoids has an adjuvant action resulting in higher antitoxin titers in vaccinated animals, bacterin-toxoids were next tested. It was felt that the addition of staphylococci to the toxoid might also result in the production of some antibacterial immunity in the treated cattle.

A commercial bacterin-toxoid prepared from whole broth cultures using *Staph. aureus* strain No. 7 was tested for this study. Before inactivation with formalin, the hemolytic titers of the toxins in this product were 1:1,024 for *alpha* toxin and 1:512 for *beta* toxin. The producers reported difficulty in the inactivation of the toxin with 0.4 per cent formalin in the presence of the staphylococci. It was necessary to add additional formalin during the inactivation period and to continue incubation for about six months. The bacterin-toxoid contained 3 billion staphylococci per milliliter and 0.5 per cent potassium aluminum sulfate was added as an adjuvant.

A group of 45 cows in the same herd described previously was given two intramuscular injections of 10 ml. of this bacterin-toxoid at four-week intervals; 35 cows were used as controls. During the following eight months, no new infections and 10 acute cases developed in the 45 vaccinated cows, while in the 35 control cows, 4 new quarters became infected with

TABLE 2—Results of Vaccination of Cattle with Staphylococcal Bacterin-Toxoid

No. of cows		Av. normal antitoxin titer	Av. antitoxin titer 1 mo. after 2nd injection	No. of infected quarters at time of vaccination	No. of infected quarters after 8 mo.	Acute infections during 8 mo.
Vaccinated*	45	12 I.U./ml.	33 I.U./ml.	46	40	10
Control	35	10 I.U./ml.	10 I.U./ml.	29	33	19

*Vaccination procedure: two injections of 10 ml. of bacterin-toxoid at four-week intervals.

staphylococci and 19 acute cases occurred (table 2).

This study was terminated after eight months since there was some concern that the bacterin-toxoid used may have lost some of its potency due to the long incubation period that was required to inactivate the toxins. Thus, although the material did stimulate the production of antitoxins and increased the resistance of most of the vaccinated cows, it was felt that a new bacterin-toxoid should be tested.

B) A bacterin-toxoid was next prepared in our laboratory by broth culture as outlined in the section on "Materials and Methods." Before inactivation with formalin, the hemolytic titers of the toxins were 1:2,048 for *alpha* toxin and 1:1,024 for the *beta* toxin with an Lh of .079 ml. for *alpha* toxin. Three billion heat-killed staphylococci of strain No. 7 per milliliter and 0.5 per cent potassium aluminum sulfate were added to the fluid toxoid.

A group of 39 cows in the above herd was vaccinated with this preparation, administered in two intramuscular injections of 10 ml. at four-week intervals. Six months later, all cows were given a booster injection of 10 ml. of a similar, commercially-prepared bacterin-toxoid. A group of 34 cows in the same herd was used as controls.

At the end of one year (table 3), the number of infected quarters remained the same in the vaccinated cows and increased from 11 to 31 in the nonvaccinated cows, an increase of infected quarters in the control group from about 8 to 22 per cent during this period. Three acute cases of staphylococcal mastitis developed in the 38

vaccinated cows and 8 acute cases in the 34 control cows. During this study, non-*agalactiae* Streptococcus infections became a problem in this herd and complicated the diagnosis of staphylococcal infections where a mixed infection developed in a given quarter. Such infected quarters were not included in the given data. The *alpha* antitoxin titers of the vaccinated cows ranged from 12 to 96 I.U. per milliliter when the serum was tested one month after the second injection, and from 6 to 12 units after six months. Following the booster injection of 10 ml. of the bacterin-toxoid, the antitoxin levels again ranged from 12 to 96 units one month after the injection.

C) In a separate small dairy herd, the bacterin-toxoid and vaccination schedule described in section B were tested in 8 cows, using 7 cows as controls. In the vaccinated group, there were ten quarters with staphylococcal infections prior to vaccination and 11 infected quarters at the end of one year. In the control group, eight quarters were infected at the start of the study and 15 quarters at the end of one year. Thus, there was an increase in infected quarters of only about 3 per cent in the vaccinated cows and of 25 per cent in the control cows. No case of abnormal milk or swelling of the udder was reported for any of the vaccinated cows during the one-year test period and 1 acute case in the control cows. The average normal *alpha* antitoxin titer for the vaccinated and control cows was 9 units and 8 units per milliliter, respectively. One month after the second injection of bacterin-toxoid, the

TABLE 3—Results of Vaccination of Cows with Staphylococcal Bacterin-Toxoid

No. of cows		Av. normal antitoxin titer	Av. antitoxin titer 1 mo. after 2nd injection	No. of infected quarters at time of vaccination	No. of infected quarters after 12 mo.	Acute infections during 12 mo.
Vaccinated*	38	7 I.U./ml.	32 I.U./ml.	31	31	3
Control	34	8 I.U./ml.	9 I.U./ml.	11	31	8

*Vaccination procedure: two injections of 10 ml. of bacterin-toxoid at four-week intervals and a booster injection of 10 ml. bacterin-toxoid six months later.

average *alpha* antitoxin titer of the vaccinated cows was 64 units per milliliter.

EXPERIMENT 4

Challenge of Vaccinated Cows with Staph. Aureus.—Eight cows were used in an experiment to study the increase in resistance to intramammary challenge with different numbers of *Staph. aureus* following vaccination with bacterin-toxoid. The strains used for challenging were recently isolated from acute or chronic cases of staphylococcal mastitis. Four cows were used as controls and 4 cows were vaccinated with two injections, at four-week intervals, of 10 ml. of the bacterin-toxoid described in experiment 3-B. The vaccinated cows were challenged one to two months later. While the number of animals used was too small to warrant final conclusions, the vaccinated cows were definitely more resistant than the control cows.

As previously reported,¹⁰ it was necessary to inject large numbers of staphylococci into the teat canal to establish a clinical or acute mastitis infection even in the nonvaccinated cows. However, when 2 to 5 ml. of culture suspension containing 1 to 5 billion staphylococci was infused into individual quarters, only a mild infection of short duration developed in the vaccinated cows and severe, acute reactions, which generally later developed into chronic infections, developed in the nonvaccinated cows. When 20 billion or more staphylococci was injected into the vaccinated cows, acute mastitis did develop.

DISCUSSION

During the course of these studies, it was found that the normal *alpha* antitoxin titers in first-calf heifers or noninfected cows were generally less than 2 to 6 units per milliliter of blood serum. Following staphylococcal infections in one or more quarters, the *alpha* antitoxin titer increased several-fold, particularly following acute infections. In the group of vaccinated cows, only a few failed to produce a marked increase in antitoxin titers. However, such cows appeared to be resistant to staphylococcal mastitis infection.

While it is assumed that the prevention of acute flare-ups in staphylococcal-infected quarters of the vaccinated cows was due to *alpha* antitoxin, other antibodies may also

be important in establishing a resistance to infection with these staphylococci following the injection of bacterin-toxoid. Thus, *alpha* antitoxin titers alone do not necessarily indicate the degree of resistance that may be present in a vaccinated cow at different periods.

Although no detailed studies were made on the *beta* antitoxin titers in the cows under study, it was possible to demonstrate a definite increase in the *beta* antitoxin levels following vaccination with the toxoid or bacterin-toxoid preparations. A rise in agglutinin titers also occurred.

No appreciable irritation or toxic reaction developed in any of the cows following the injection of the toxoid or bacterin-toxoid preparations.

The results reported here definitely indicate that the resistance of dairy cattle to staphylococcal mastitis can be increased by vaccination with staphylococcal toxoid or bacterin-toxoid as reported by French investigators and by others⁹ in this country. Further studies may result in the improvement of the antigenic potency of the bacterin-toxoid. Tests made in our laboratory indicate that more than one antigenic type of *Staphylococcus* may infect a dairy herd. Thus, better results might be obtained using a mixed bacterin representing these antigenic types. It may also be possible to improve the potency of the toxoid. Additional information is also needed to establish the optimum number of injections, the injection intervals, and the duration of the immunity which develops in vaccinated cows.

SUMMARY

In studies made over a five-year period, vaccination with staphylococcal toxoid or bacterin-toxoid was found to stimulate the production of antibodies and increase the resistance of cattle to staphylococcal mastitis. Spread of the infection was almost completely prevented in the vaccinated cows and there was a marked reduction in the number of acute flare-ups in infected cows over periods up to 18 months.

Vaccination did not result in the recovery or elimination of the infection in the majority of quarters with well-established chronic infections.

When challenged with 1 to 5 billion virulent mastitis staphylococci via the teat canal, vaccinated cows developed only mild

reactions of short duration while severe, acute reactions developed in nonvaccinated cows. When the challenge dose was increased to about 20 billion organisms, the vaccinated cows did develop acute infections.

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Deer Antlers Accumulate Radioactivity

Analysis of deer antlers, in Scotland, indicates that there has been a tenfold increase in radioactivity in about five years in deer that graze on upland pastures known to contain relatively high levels of fall-out radioactivity.

The strontium activity in the antlers of

deer shot in 1952 was only 11.2 micro-microcuries/Gm. of calcium, but it was 126 micro-microcuries in the antlers of deer shot in 1957.—*Nature* (Nov. 8, 1958):1294.

Another Swine Erysipelas Vaccine

The first swine erysipelas vaccine,* a living attenuated culture, was prepared by Pasteur in 1882 by passaging the infective agent through rabbits. Many bacterins have been produced but they induced only a low-grade, brief immunity. The more recent use of adjuvants in bacterins, to retard their absorption and prolong their action, caused local inoculation swellings without apparently increasing the immunizing value. Tests in Holland indicated that a modified (Staub) vaccine produced better immunity than inactivated vaccines.

The present new modified vaccine utilizes a C₁ strain of *Erysipelothrix rhusiopathiae* derived from old laboratory strains which had been transferred monthly on culture mediums for ten to 15 years. In extensive field trials, this vaccine produced a reddening at the site of the injection, which could be considered as a "take," but there were no signs of illness. Vaccination did not produce carriers of the disease and the organism showed no evidence of reversion to virulence.

Intradermal challenge indicates that immunity is induced in 80 to 90 per cent of vaccinated pigs and, furthermore, it seems to protect against clinical arthritis as well as against acute erysipelas.—K. F. Lawson et al. in *Canad. J. Comp. Med.*, 22, (May, 1958): 164.

*This vaccine is marketed as Duragen by Corn States Laboratories, Inc., Omaha, Neb.

Hereditary Abnormal Tongues, Cleft Palates, and Harelips in Pigs

A congenital defect of the tongue, usually accompanied by cleft palate and sometimes by harelip, was found in two herds of Norwegian Land swine. The tip of the tongue was often split into two lobes of different size. The pigs were usually born alive but died in one or two days.

Two sows produced 12 defective and 32 normal pigs when mated to their common sire but farrowed normal pigs when mated to unrelated boars.—*Nord. Vet.-med.* (Oct., 1958): 625.

Radiation Biology in Veterinary Education and Research

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Ithaca, New York

THE ADVENT of the atomic age brings with it problems and opportunities for all who are concerned with any aspect of the health sciences. Problems may arise from possibilities of nuclear disaster and waste disposal from power reactors; problems have already arisen from the dissemination and entrance of radioactive materials into the food chain from weapons testing and a reactor accident. Opportunities are unlimited for the use of radioactive materials in biological research, in diagnosis and therapy, in radiation sterilization of drugs and foods, and in applications not yet envisioned.

This paper is an attempt to give some measure of the ways and means by which the veterinary profession can, in time to come, play its full role and gain advantages from these developments.

Certain subject areas may logically be considered as integral parts of veterinary medicine and veterinary science. For example, nutrition and husbandry as developed in the sphere of veterinary medicine may have an entirely different approach than if developed from the standpoint of animal production. The student who has to go outside the veterinary sphere for his coverage in these areas will most likely not get the maximum useful benefits that would otherwise be obtained if the nutrition and husbandry aspects had been treated with veterinary needs and applications in mind.

Now we have a new field on the horizon—radiation biology. Will the veterinary schools take the initiative, or will the veterinarians have to pick up what they can from the physicists and the medical profession?

From the Laboratory of Radiation Biology, Physiology Department, New York State Veterinary College, Cornell University, Ithaca.

The work of the Laboratory of Radiation Biology is supported in part by contracts and grants from Office of the Surgeon General, Department of the Army; U.S. Atomic Energy Commission; U.S. Department of Agriculture; and U.S. Public Health Service.

Presented before the Section on General Practice, Ninety-Fifth Annual Meeting, American Veterinary Medical Association, Philadelphia, Pa., Aug. 18-21, 1958.

RADIATION BIOLOGY AT CORNELL

Support for an intensive research program has been provided by several government agencies, in particular, the U.S. Department of Agriculture, the Atomic Energy Commission, and the Department of Defense. Immediate research activities are concerned with the biological consequences of dissemination of radioactive materials in the food chain. This is a broad program and calls for fundamental and applied work, particularly in the fields of physiology, pathology, and nutrition over and above classical radiation biology.

The fact that such a program is underway in the Veterinary College insures that many students and staff, although not having a direct concern, will develop some interest in the work and perhaps be led to eventual participation. The existence of this program with its facilities and equipment is already making it possible to accommodate graduate students with specific problems that are more easily solved by atomic energy procedures. There is already an active participation by the clinical departments aimed toward development of routine diagnostic procedures, and eventually there should be a contribution to radiological therapy.

DIAGNOSTIC TESTS FOR VETERINARY MEDICINE

Following are some specific examples of simple diagnostic tests that are being used routinely by the medical profession and which are being adapted for veterinary usage.

Thyroid Function.—This test is based upon the well-established ability of the thyroid gland to concentrate iodine. Iodine is used by the thyroid to manufacture the hormone, thyroxine, which is one of the key metabolic regulators of the body. The patient is given a small dose of radioactive iodine; 24 hours later, an external measurement is made over the thyroid gland (fig. 1). If the uptake is less than 15 to 20 per cent, this is indicative of hypothyroidism.

Kidney Function.—The patient is given a labeled radiopaque material (Diodrast*) intravenously and external counts are then made over the kidney. Studies of patients with a variety of kidney diseases have indicated that the vascularity, parenchymal function, and patency of the excretory

tal blood. A solution of iodinated serum albumin is administered and the curve of appearance of radioactivity is recorded. From the area under the curve and the blood volume, the cardiac output can be calculated.

Liver Function.—Rose bengal dye has

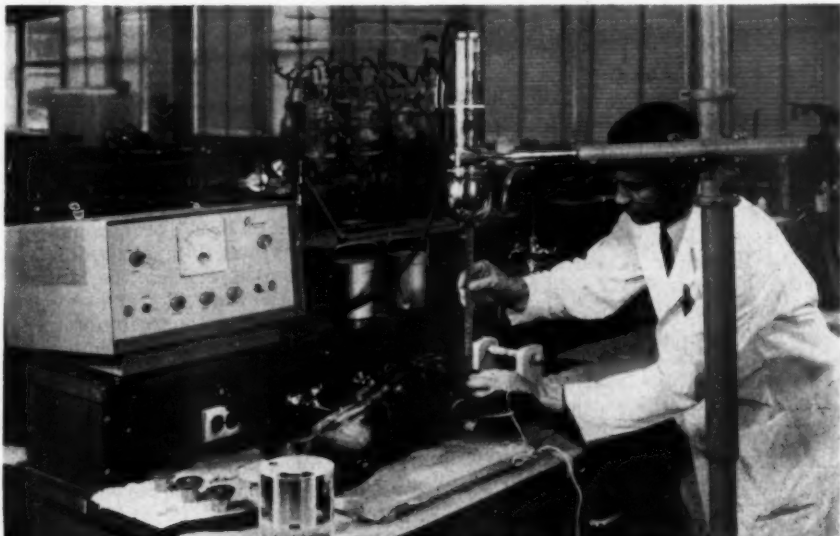


Fig. 1—Thyroid function is estimated by injection of radioiodine and external counting of the thyroid gland 24 hours later with a collimated scintillation detector. This dog was anesthetized, but often the dog cooperates and anesthesia is not necessary. Notice the plastic phantom in the foreground used for purposes of standardization.

ducts can be evaluated by inspection of the recorded curves of radioactivity over the kidney.

Cardiac Output.—Cardiac output has been estimated for a number of years by the dye dilution technique. Usually Evan's blue dye is injected intravenously and the pattern of appearance in arterial blood is followed by arterial sampling. The loss of blood during the procedure obviates this method in seriously ill patients in which it would be important to know the cardiac output.

A radioisotope technique makes it possible to estimate cardiac output by external measurement of radiation over the heart following intravenous injection of radioiodinated serum albumin. A detector is directed toward the aorta through tissue which has little intervening musculoskele-

frequently been used for studies on liver function. The rose bengal molecule (tetraiodotetrachlorofluorescein), when labeled with radioactive iodine, may be used as a test for liver function by external counting. The dye is injected intravenously and the rate of uptake of dye in the liver is measured and recorded. In the normal individual, the radioactivity over the liver rises to a peak at 15 to 30 minutes post-injection and then falls gradually as excretion occurs. Before using the test, the normal patterns from a number of individuals without liver disease should be obtained. In diseases of the parenchyma of the liver, there is a decreased uptake of dye. In obstruction of the bile ducts, the uptake remains normal in the absence of parenchymal involvement, but the excretion rate is diminished.

Blood and Plasma Volume.—Blood and plasma volume measurements are based on

*Diodrast is manufactured by Abbott Laboratories, North Chicago, Ill.

the dilution which takes place when a material is introduced and mixed with the total circulating blood. Until recently, a most commonly employed technique for blood volume studies was the Evan's Blue Method; a disadvantage is that the dye stains the blood and tissue and, therefore, the test cannot be immediately repeated.

Use of radioisotopes eliminates this disadvantage. The most commonly used radioisotope for blood and plasma volume studies is radioiodinated serum albumin. When given intravenously, the labeled material is quickly distributed through the blood. If a known volume of radioactive material is added to the unknown volume of blood and later, after mixing is complete, a volume is withdrawn, the decrease in radioactivity will be directly related to the dilution in the blood. Calculation of the total blood volume is then easily made.

Since the radioiodinated serum albumin is confined to the plasma, and the activity is not transferred to the red cells, it is possible to separate the plasma from the whole blood, count the plasma in exactly the same way, and thus have a measurement of the plasma volume. The time required for both determinations is about 30 minutes. The measurements may be repeated as often as desired.

Diagnosis of Pernicious Anemia.—Vitamin B₁₂ is absorbed from the gastrointestinal tract in the presence of an intrinsic factor arising from the gastric mucosa. The absorption may be followed after the oral administration of labeled vitamin by estimation of the unabsorbed radioactivity in the feces or by measuring the appearance of radioactivity in the liver, which acts as a temporary storage site. Also, there is a method in which the liver uptake is blocked by parenteral administration of a large dose of unlabeled vitamin B₁₂ and the urine is then collected for 24 hours. Here the labeled vitamin absorbed from the intestinal tract is promptly excreted in the urine.

In the patient with pernicious anemia, lack of intrinsic factor reduces normal absorption from the gastrointestinal tract. Following subtotal gastrectomy, the absorption of vitamin B₁₂ may be as low as in pernicious anemia. The administration of a dose of potent intrinsic factor prepared from hog's stomach will increase the absorption in subsequent tests in these two types of patients. In sprue, the absorption

of vitamin B₁₂ is low, with no improvement on administering intrinsic factor.

Therapeutic applications will depend upon the use of large radioactive cobalt sources that may have some advantages over the conventional x-ray machine for deep therapy. Also, the ready availability of radioactive wire, beads, and solutions provides a versatile tool for delivery of radiation to local sites—in cancer of the eye, for example.

UNDERGRADUATE PROGRAM

Since the time of the student is limited, it does not seem appropriate to offer a special course for undergraduates. However, it is planned that the undergraduate will be given a broad background in radiation biology and its application. This will not be aimed at making the student proficient in the use of radioisotopes, but should give him an appreciation of current trends and a base for subsequent development if his interests and ability permit.

This background can be given in courses already established; for example, physiology courses could include lectures on radioisotopes in the study of ion transport; pathology courses could cover the gross and microscopic effects of radiation; physiological chemistry courses could have discussions on the contribution of radioisotopes to the understanding of intermediary metabolism; pharmacology lectures would naturally include findings based on metabolic studies with labeled drugs; radiology courses would cover teletherapy and brachytherapy techniques—the uses of radioactive cobalt wires and beads for local treatment; clinics could demonstrate simple diagnostic tests such as the use of radioiodine for thyroid function and radioactive rose bengal for liver function.

GRADUATE PROGRAM

In addition to research theses undertaken by graduate students working for degrees in radiation biology, a formal course is offered. This course is open to any student interested in pursuing advanced study in the biological sciences who has a reasonable background in mathematics, physics, and chemistry. The student must have had some analytical chemistry and advanced algebra; calculus is desirable but not essential. The primary aim of this course is to give an intensive coverage of

the theory of radioisotope usage, and to provide an opportunity for the student to use up-to-date equipment in biological experiments. The course carries four semester credits and is comprised of two lectures and one laboratory period per week.

The lecture material includes the following: review of pertinent chemistry, physics, and mathematics; atomic structure, radioactivity, and decay laws; properties of radiation, interaction of radiation and matter; dosimetry and shielding; instrumentation; radioassay methods; principles of radioisotope usage (direct movement, rates of movement, isotope dilution, kinetics); ion exchange; paper chromatography and electrophoresis; autoradiography; basic difficulties in radioisotope usage; radioactivation analysis; special carbon 14 and tritium techniques; the problem of fall-out.

The individual laboratory experiments may be briefly described as follows:

1) Operation and calibration of Geiger counters, count-rate meters, ionization survey meters, pocket dosimeters.

2) Counting statistics, deadtime, pipetting accuracy.

3) Self-absorption, absorption, backscatter.

4) Distribution of radioactive phosphorus in a rat.

5) Determination of blood volume in the rabbit, using red cells labeled with radioactive chromium.

6) Determination of protein-bound and ionized calcium in blood serum; separation of cobalt and nickel by ion-exchange.

7) Autoradiography; strontium 90 in bones of developing chicken embryo by stripping film and mounting technique.

8) Operation of single channel analyzer, measurement of gamma ray spectrum.

9) Simultaneous analysis of mixtures of radioisotopes: paper chromatography.

10) Thyroid function in the dog; *in vivo* measurement of radioactive iodine in the thyroid gland; isodose curves by external counting.

11) Gas analysis for carbon 14; metabolism of C14-labeled drugs in the rat.

SPECIAL ACTIVITIES

It is anticipated that one- to two-week courses may be given for groups that desire an introduction or orientation in the subject matter of radiation biology. Such

groups might include Armed Forces veterinarians, public health officials, and members of agricultural agencies. Shorter courses may be arranged for special groups that have a specific scientific interest, e.g., hematologists, immunologists, ecologists, gerontologists.

In addition, lectures and demonstrations are provided for lay conferences that cater to such groups as feed organizations, dairy industries, and farmers.

GENERAL COMMENTARY

The needs of the veterinary profession and their fulfillment in the field of radiation biology can be indicated as follows:

1) The undergraduate can be given a broad understanding of the implications and applications within the courses he already takes.

2) The graduate student or the veterinarian who wishes to become qualified to do research with atomic energy, or to become qualified to do a wide variety of clinical tests, will require a formal course or the equivalent of about a year's work in the field.

3) The veterinarian who wishes to do only a few established routine tests, or the qualified radiologist who wishes to do teletherapy, would require only a short period of training (two to four weeks).

4) The veterinarian who wishes general knowledge but does not want to become qualified himself can accomplish this by attendance at appropriate conferences from time to time (one or two days to a week at the most).

SUMMARY

An educational and research program in radiation biology has been established at the New York State Veterinary College. Undergraduates are given background material within, and related to, the courses they normally take. Special courses are given for graduate students and short courses or conferences are planned for specific groups.

Clinical applications are being adapted from routine radiobiological diagnostic tests that are routinely used for man, e.g., tests for thyroid function, kidney function, cardiac output, liver function, blood and plasma volume, and diagnosis of pernicious anemia. A research program has been instituted with both staff and student participation.

Effects of Ambient Temperatures on the Brucellosis Rapid Plate-Agglutination Test

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THE RELATIONSHIP of ambient temperatures to the degree of reactions obtained by the brucellosis rapid plate-agglutination test has not been fully investigated. The purpose of this paper is to report the variation of test results which occurred when serums were tested at different ambient temperatures. This comparison was initiated when a marked increase in the number of suspicious titers occurred in the Wisconsin State-Federal Cooperative Brucellosis Eradication Testing Program during a long heat wave in the summer of 1955.

MATERIALS AND METHODS

Three groups of serums were included. Group 1 consisted of 30 samples having reacting titers of 1:50 or less when tested at an ambient temperature of 79 F. Group 2 consisted of 60 samples having reacting titers of 1:200 or less at 79 F. The samples for groups 1 and 2 were submitted to the laboratory for program testing. Group 3 consisted

the Animal Disease Eradication Division of the Agricultural Research Service.¹ All samples were tested at three dilutions: 1:50, 1:100, and 1:200.

The same testing procedures, equipment, and serial lot of Animal Disease Eradication Division antigen were used for all tests conducted. Samples were first tested at room temperature (79 F.) and then retested at 97 F. The prevailing relative humidity was adequate to prevent the drying out of the antigen-serum mixtures during the eight-minute incubation period.

RESULTS

As can be seen (table 1), a considerable increase in the number of reacting titers and in the degrees of reactions occurred when these serums were tested at the higher ambient temperature of 97 F.

At 79 F., 6.6 per cent of the samples in group 1 reacted at the 1:50 dilution and none reacted at higher dilutions; whereas, at 97 F., 40.0 per cent of the samples reacted at the 1:50 dilution, 3.3 per cent at

TABLE 1—Results of Three Groups of Brucella Agglutination Tests Carried Out at Two Different Ambient Temperatures

Group		Ambient temperature					
		79 F.			97 F.		
1	Titer	1:50	1:100	1:200	1:50	1:100	1:200
30	Positive (No.)	2	0	0	12	1	1
Samples	Positive (%)	6.6	0	0	40.0	3.3	3.3
2	Titer	1:50	1:100	1:200	1:50	1:100	1:200
60	Positive (%)	58	28	4	60	45	17
Samples	Positive (%)	97.0	47.0	6.7	100	75.0	28.0
3	Titer	1:50	1:100	1:200	1:50	1:100	1:200
40	Positive (No.)	15	1	0	32	4	1
Samples	Positive (%)	37.0	2.5	0	80.0	10.0	2.5

of 40 samples from a brucellosis-free certified herd having reacting titers of 1:100 or less at 79 F.

The testing techniques and the method of interpreting these results were those approved by

Veterinarian in charge (Pope) and serologist (Ruedy), Wisconsin Animal Diagnostic Laboratories, Madison. This was a cooperative project conducted by the Animal Health Division of the Wisconsin State Department of Agriculture and the Animal Disease Eradication Division, Agricultural Research Service, U.S. Department of Agriculture.

The authors thank Drs. S. H. McNutt and D. T. Beriman, Veterinary Science Department, University of Wisconsin, for their assistance and guidance in carrying out this project.

¹Brucella Abortus Diagnostic Antigen Outline (May 1, 1950 rev.), issued by the Animal Disease Eradication Division of the Agricultural Research Service, 1950.

the 1:100 dilution, and 3.3 per cent at the 1:200 dilution.

At 79 F., 97.0 per cent of the samples in group 2 reacted at the 1:50 dilution, 47.0 per cent at the 1:100 dilution, and 6.7 per cent at the 1:200 dilution; whereas, at 97 F., 100 per cent of the samples reacted at the 1:50 dilution, 75.0 per cent at the 1:100 dilution, and 28.0 per cent at the 1:200 dilution.

At 79 F., 37.0 per cent of the samples in group 3 reacted at the 1:50 dilution, 2.5 per cent at the 1:100 dilution, and none at the 1:200 dilution; whereas, at 97 F., 80.0

per cent of the samples reacted at the 1:50 dilution, 10.0 per cent at the 1:100 dilution, and 2.5 per cent at the 1:200 dilution.

None of the samples in these groups decreased in reacting titer when they were tested at 97 F.

DISCUSSION

In the summer of 1955, Wisconsin experienced a heat wave with temperatures of 90 F. and above for approximately a month. Concurrently with this heat wave, the authors observed a marked increase in the number of suspicious titers occurring in the State-Federal Cooperative Brucellosis Eradication Program. Approximately 10,000 samples per day were being tested at this time and the increase in the number of suspicious titers was evident.

This precipitous increase in the number of suspicious titers began, shortly thereafter, to make its impact on the brucellosis eradication program in the field. The problem of increased numbers of suspicious titers in herds previously brucellosis-free was being reported by alarmed veterinary practitioners. It was particularly evident in the certification and recertification of brucellosis-free herds.

An initial investigation was made of all the testing procedures used at the laboratory. Routine antigen-sensitivity checks are continuously conducted by comparison of each serial lot of antigen used with a standard serial lot of antigen obtained from the Animal Disease Eradication Division. No discrepancies or deficiencies in testing techniques or antigen-sensitivity could be observed from this work.

One factor, room temperature, was known to be uncontrolled because of the absence of a temperature control system in the testing room where the temperature during the heat wave was continuously above 90 F. and occasionally as high as 100 F.

A search of the literature revealed the absence of previous work dealing specifically with the effect of temperature on the antibody-antigen reaction of the brucellosis rapid plate-agglutination test or the critical temperature ranges where variations in test results could occur.

This investigation of the effects of high ambient temperature on the degree of reactions obtained by the brucellosis rapid plate-agglutination test enabled the labora-

tory to secure appropriations for a temperature-control mechanism in the testing room. The temperature of the testing room is now maintained at 72 to 75 F. throughout the year.

SUMMARY

When three groups of bovine serums were tested at two different ambient temperatures, it was shown that the higher ambient temperature significantly increased the number of suspicious and reactor titers in the rapid plate-serum agglutination test for brucellosis.

These results indicate the need for maintaining uniform ambient temperatures throughout the year in the testing rooms of all laboratories conducting this test.

Studies on Brucellosis in Sheep

Of 16 artificially infected ewes, *Brucella melitensis* organisms were recovered in 8 after eight months of infection. Ewes infected during pregnancy became carriers more often and for a longer time than those infected when not pregnant. There seems to be no preferred location for the organism.—*Monatsh. f. Tierheilk.*, 10, (1958): 21-29.

• • •

When ewes were infected with *Brucella melitensis* during the last third of pregnancy, some lambs were stillborn, others died soon after birth. Antibodies were acquired from the colostrum milk during the first four days of life but only if the dam had been infected and had a titer of 1:15 at the time of parturition. Of 8 lambs left with infected dams, 4 became infected between 74 and 152 days of age. *Brucella* were found in the lymph nodes of the heads and necks of these lambs, either before or after birth.—*H. Mayer in Monatsh. f. Tierheilk.* 10, (1958): 43-52.

Human Brucellosis Decreasing

The incidence of brucellosis in Minnesota, from 1943 through 1949, had ranged from 10.0 to 13.8 cases per 1,000 human population; it had steadily decreased from 1.94 in 1956.

Prior to 1950, the number of human cases had roughly paralleled the shifts in cattle population. However, since 1940, when the first county was certified as bovine brucellosis-free, the human case rate

has been 3.12 times greater in noncertified than in certified areas.—*J. R. Held et al. in Pub. Health Rep., (Dec., 1958): 1096.*

Ringworm Epidemic in Man and Cattle

The dermatological clinic in Hamburg, Germany, reported an increased incidence of ringworm in the rural population in 1956, mostly in children who played in cowsheds and handled affected calves and cows. A veterinarian had a lesion on the arm.

Trichophyton verrucosum was isolated from 38 of 217 cattle in ten herds, and from 16 persons. After improvements in hygiene and ventilation, the herds were almost free from infection a year later.—*Vet. Bull. (July, 1958): Item 2080.*

Griseofulvin Therapy for Ringworm

When 4 calves were artificially inoculated with *Trichophyton verrucosum* and were given griseofulvin *per os* daily for five weeks, no lesions formed. When ringworm lesions were well developed in 3 other calves, five weeks after inoculation, 2 were given griseofulvin orally for three weeks. After two weeks of treatment, no fungi could be found microscopically and, at the end of three weeks, new hair was growing and the crusts had disappeared.

The calf left as a control continued to have lesions for more than three months.—*I. M. Lauder and J. G. O'Sullivan in Vet. Rec. (Nov. 22, 1958): 949.*

Congenital Taillessness in Cattle

This rare defect was observed in 25 cattle sired by registered bulls of seven breeds. Only in the Holstein-Friesian breeds was there a slight evidence of hereditary basis. In females, in which it was twice as prominent as in males, it was occasionally accompanied by dorsal and anterior misplacement of the vulva and anus, by a concave rump, and stiffness of the hindlimbs. Malformations, of the vertebral column were variable.

It seems to have occurred not more often than once in 3,000 births, perhaps not more than once in every 20,500 births.—*J. Dai. Sci., 41, (Oct., 1958): 1359.*

Rabies in Ontario

Following the extensive epizootic of rabies in northwestern Canada (*Canad. J. Pub. Health, Oct. 19, 1954: 316*), the disease appeared in northern Ontario in 1954 with 46 confirmed cases. During the year 1955 to 1956, the 137 confirmed cases included 85 foxes, 23 dogs, 24 cattle, and 4 wild animals. During July, 1958, there were 161 positive cases, more than in the entire preceding year.—*Canad. J. Pub. Health, 49, (Oct., 1958): 435.*

Treatment of Screwworm Infestations

Either chloroform or benzol will effectively kill maggots in wounds but both are somewhat irritating and, being highly volatile, must be followed by a repellent dressing such as pine oil.

Smear 62, developed in 1941, is highly effective. It contains benzol (3.5%), diphenylamine (3.5%), as well as turkey red oil and lampblack.

However, smear EQ 355, introduced in 1950, is regarded as more effective for the destruction of screwworms in wounds. It contains lindane (3%) and pine oil (35%), as well as an emulsifier which aids in the mixing of the compounds with the wound secretions.

Aerosol bombs containing lindane, pine oil, emulsifiers, and other ingredients, are also available.—*H. M. Martin in Univ. of Pennsylvania Bull. (Oct. 15, 1958): 34.*

Plasmin Dissolves Blood Clots

Human plasmin, an enzyme of blood plasma, has been used successfully to dissolve blood clots in the blocked arteries of experimental animals.

When injected into induced arterial clots, the blood flow appeared within 11 to 27 minutes. However, in severe cases, new clots formed when injections were discontinued.—*Sci. News Letter (Oct. 18, 1958): 247.*

A Super-Prolific Cow.—A Guernsey cow, 10 years old, had twins at her eighth calving in August, 1958, for a total of 15 calves in eight years. Three times she had single calves but, in her third and fourth calvings, she had triplets, and in her fifth and sixth calvings, twins, for a total of 10 calves in 35 months.—*G. T. McDaniel, Jr., in Georgia Vet. (July-Aug., 1958): 19.*

What Is Your Diagnosis?

Because of the interest in veterinary radiology, a case history and radiographs depicting a diagnostic problem are usually published in each issue.

Make your diagnosis from the picture below—then turn the page ►



Fig. 1—Radiograph, mediolateral view, of the left and right stifles of the Miniature Poodle.

History.—A male Miniature Poodle, 4 months old, was left at a hospital overnight. When he arrived at home, he was limping on the left hindleg and, therefore, was immediately returned to the hospital. It was thought that the injury was in the region of the left stifle, and mediolateral radiographs of both stifle regions were taken (fig. 1).

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—Avulsion of the left tibial tuberosity. The radiographic appearance of the right tuberosity and stifle was thought to be normal.



Fig. 2—Radiograph, mediolateral view, of the left stifle of the Poodle showing the displaced tibial tuberosity (a).

Comment.—Disturbances of the tibial tuberosities of the growing dog, either avulsion (tearing away) or osteochondrosis (degeneration), are not unusual. This area must be considered in all lamenesses of the growing dog, especially up to the time the epiphysis becomes fused (1 to 1½ yr.). The tibial tuberosity serves as an attachment for the patellar ligament and, in young dogs, because of the muscular pulling, it is subject to injury, especially before the attachment of the tuberosity to the tibia is secure.

To avoid errors in diagnosis, similar regions in the opposite limb should always be radiographed. An area which appears to be abnormal may prove to be normal for an early stage of development because of lack of ossification. Osteochondrosis, another ailment which may affect this tuberosity, has been discussed in the JOURNAL (July 1, 1958: adv. pp. 43-44).

This report was submitted by Dr. Edna C. Guibor, Riser Animal Hospital, Skokie, Ill.

Our readers are invited to submit histories, radiographs, and diagnoses of interesting cases which are suitable for publication.

Two Cases of Vascular Surgery in the Dog

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THE RAPID strides which have been made in surgery on the cardiovascular system in man during the past ten to 15 years have been preceded usually by experimentation in the dog. It would seem only fitting, therefore, that these techniques should be utilized in the treatment of similar illnesses in these animals.

Two cases, illustrating modern diagnosis and surgical technique in the treatment of vascular lesions in the dog, are reported in this paper.

CASE REPORTS

Case 1.—In November, 1957, during a routine examination of a litter of Great Dane pups, 8 weeks old, 1 apparently normal pup was found to have an obvious to-and-fro "machinery" murmur, accompanied by a distinct thrill palpable throughout the lower half of the thorax. A patent ductus arteriosus was suspected, and surgery was recommended. Although the 22-lb. pup was normal in all other respects, it was felt that a reparative operation would give this animal a better chance for a normal life.

The pup was given $\frac{1}{2}$ gr. of morphine and 1/150 gr. of atropine as preanesthetic agents, and was anesthetized with intravenous sodium pentobarbital. A tracheal catheter with an inflatable cuff was inserted and attached to a resuscitator. The surgical site was prepared and suitably draped.

Entrance into the thorax was made in a routine manner through the left fourth intercostal space. Retractors were used to hold the ribs apart. The mediastinal pleura and the visceral pericardium were incised, exposing the pulsating ductus, approximately 7 mm. in diameter. The adventitia of the aorta and the pulmonary artery were dissected carefully.

Having been cleared of adventitia and loose areolar tissue, the ductus was grasped with two coarctation clamps equipped with Kapp-Beck atraumatic serrations. The ductus was then divided between them and the divided ends were sewn over, using

5-0 arterial silk on an atraumatic needle. The method of suturing the ends was quite simple. The first suture was tied and then continued as a running, over-and-over stitch back and forth across the severed ends of the ductus both on the aortic and pulmonary sides. Bites were 1 mm. from the severed ends of the ductus.

Division of the ductus is the preferred method of handling this vascular anomaly since a simple ligation is accompanied by a significant incidence of recanalization. The pericardium is not sutured. This prevents the development of cardiac tamponade postoperatively by allowing free drainage into the pleural cavity.

One gram of streptomycin in 50 cc. of sterile saline solution was put into the pleural cavity to prevent postoperative infection, and the thorax was closed in the conventional manner with No. 2-0 catgut, using one line of sutures for the pleura, ribs, and the intercostal muscles, one for the subcutaneous fat, and one for the skin.

A rubber catheter was left protruding from the pleural cavity until the closure was complete, and the residual air was aspirated by means of a 20-cc. syringe. Prior to this, the lungs were fully expanded simultaneously by adjusting the inflation volume of the resuscitator.

Postoperatively, 250 cc. of whole blood was administered intravenously. The dog was given penicillin-streptomycin therapy twice daily for four days and recovered satisfactorily.

Even though the patent ductus arteriosus was closed successfully, distinct systolic and diastolic bruits were evident following surgery, and are still present. This is due, evidently, to an intracardiac defect, probably of the septum.

Three weeks later, the pup was again anesthetized for ear cropping, and its reaction to the surgery and anesthesia was normal.

Case 2.—On Jan. 16, 1958, an 11-year-old male Wire-Haired Fox Terrier was presented with the following history. The dog had been let out for his usual morning walk and, after returning, suddenly had ap-

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peared to be unsteady in his hindquarters, especially favoring his right hindleg. The dog seemed uncomfortable and emitted several low moans of obvious distress.

Clinical examination revealed the following. The dog was trembling either from fright, pain, or a combination of both. His temperature was 100 F., and the color of the mucous membranes was normal. Dyspnea and moderate tachycardia were present. His hindquarters wobbled when he walked, and he seemed reluctant to bear weight on the right hindlimb.

Eight milligrams of a tranquilizer (Trilafon*) was given intravenously to facilitate further examination. The distal portion of the affected limb felt somewhat colder than the other limb, the gastrocnemius muscle was swollen, and no femoral pulse was palpable. A diagnosis of embolus or thrombus in the right femoral artery was made, and immediate surgery recommended.

Preparation for surgery was started approximately 11 hours after the clinical signs appeared. No preanesthetic medication was used, since the tranquilizer was still effective. Sodium pentobarbital was administered intravenously, a tracheal catheter was inserted, and the operative site was prepared. At the point where the pulse disappeared, in the upper third of the femoral region, an incision was made and the femoral artery was exposed by blunt and sharp dissection. There was an obvious bulging of the artery at the divergence of the proximal caudal femoral artery, beyond which pulsation was absent.

The femoral artery, several of its smaller muscular branches, and the proximal caudal femoral artery were isolated carefully. No. 1 catgut ligatures were looped around these vessels and were tightened effectively, thus preventing hemorrhage at the time of arteriotomy. A longitudinal incision, 1 cm. in length, was made through the anterior wall of the bulge in the femoral artery. The embolus was extruded from the vessel by the force of the blood stream proximal to it. The distal artery was then "milked" and further clots were removed from the distal femoral artery. The ligatures were tightened until the brisk hemorrhage

from the arteriotomy incision was controlled.

The incision was closed with 5-0 arterial silk on an atraumatic needle. The suture was tied at the proximal end of the arteriotomy incision and continued as a running, over-and-over suture. Bites were taken 1 mm. apart and 1 mm. from the edge of the wound. Following completion of the arterial repair, the controlling ligatures were released. There was no bleeding from the arteriotomy incision. The skin was closed with interrupted 4-0 black silk.

Immediately following surgery, the dog was given antibiotic therapy and 100 mg. of heparin (Depo-Heparin**) intramuscularly. He was then given 50 mg. of heparin every 12 hours for three days.

The next day, the animal was able to stand better although the affected limb was still cold and no femoral pulse was palpable. This was thought to be due to post-operative arterial spasm. The dog was sent home the second day and was treated twice daily as an out-patient for three days.

On the third postoperative day, increased warmth was noticed in the limb, and by the fifth day, a femoral pulse was detected. In eight days, the pulse and temperature of the limb were normal.

The dog now walks normally except for a slight limp which is noticeable only after strenuous exercise. A minor skin and subcutaneous infection which developed four days after surgery responded to *debridement* and local and systemic antibiotic therapy.

SUMMARY AND CONCLUSIONS

A patent ductus arteriosus in a pup, 8 weeks old, was closed surgically. Evidence of an intracardiac lesion, probably a septal defect, was present after recovery. A transpleural approach to such lesions can be made safely and successfully.

An embolectomy of the femoral artery was performed successfully on an aged dog about 11 hours after clinical signs developed. Surgery of this type should be done promptly.

These two procedures required little special equipment.

*Trilafon is a product of Schering Corp., Bloomfield, N.J.

**Depo-Heparin is a product of the Upjohn Co., Kalamazoo, Mich.

Microbiological and Therapeutic Aspects in Calf Enteritis

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PARTURITION ENTAILS a drastic and complete change in respiration, nutrition, and excretion for the newborn calf. Physical, chemical, and microbial agents impose immediate stress. Initiation, alteration, and adjustment in various physiological processes is necessary if equilibrium with the new environment is to be attained. Failure to promptly adjust results in disturbance of normal physiological processes that may lead to more stress, abnormal physiological processes, morbid anatomy, and additional pathological changes.

The digestive and respiratory systems appear to be most vulnerable. Diarrhea and pneumonia frequently occur independently or together. In the young calf, the bacteria implicated most frequently are strains of *Escherichia coli*. These bacteria are associated with the condition known as calf scours, white scours, and calf enteritis. The disease occurs in three forms: (a) an acute, rapidly fatal diarrhea; (b) a sub-acute, debilitating diarrhea; and (c) a chronic, localized joint or middle ear infection.

Many reports have been made on the scours syndrome. One author¹³ reported observations made over a period of years and stated the disease may result from bacterial infection or from unknown causes. Other workers^{7,10,12} also found bacterial species involved. A highly virulent coliform organism was isolated¹³ from calves dying of acute septicemia during the first three days of life. Coliform organisms were considered the cause of scours in calves in 18 reports⁹ covering the years from 1893 to 1955. One of these reports⁴ concerned a

bacteremia that occurred in calves, the cause being *Esch. coli commune*. The role of various other serological types of *Esch. coli* was cited⁹ as being particularly important in this condition.

A strain of *Esch. coli* of "0 group 78" and with a new B antigen has recently been described.⁵ This strain was reported to be a selective pathogen for calves and not merely a secondary invader. It was found in 35 per cent of the calves that had diarrhea.

Viruses have also been implicated in outbreaks of bovine diarrheas,^{1,2,16} but their relative importance has not been assessed.

Escherichia coli was reportedly associated with diarrheas in other animal species (ovine,³ and porcine^{6,14}). The pathogenic role of *Esch. coli* in poultry has also been reported.^{8,11}

The objectives of the present study were: (a) to determine the incidence of coliform bacteria in infectious diarrhea of calves; (b) to determine the *in vitro* sensitivity of bacteria isolated from scouring calves to selected chemotherapeutic and antibiotic agents; and (c) to evaluate the efficacy *in vivo* of selected anti-diarrheal agents for the control of calf scours.

EXPERIMENTAL PROCEDURE

A total of 71 dairy calves, 1 day old, was used in this study. The calves, obtained at local farms within 12 to 24 hours after birth, were hauled to an unheated Quonset hut and placed in individual pens. They had nursed their dams prior to penning but were subsequently fed a limited (10% of initial live weight) whole milk ration from nipple pails which were washed with cold water only. A commercial calf starter in pellet form was supplied to each calf, free-choice.

Each calf that survived was kept on the experiment for 21 days. Twice daily for each calf, the rectal temperature was taken and the feces classified. They were rated as normal (N), loose (I), diarrheic (II), watery or hemorrhagic, or both (III). When

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TABLE 1—Results of *in Vitro* Sensitivity Tests on Isolates from Calves with Diarrhea

Agent	Concentration* per disc	No. of isolates sensitive**	Agent	Concentration* per disc	No. of isolates sensitive**
Albamylin	30	4/7	Oxytetracycline	10	21/31
	100	12/14	Tetracycline	10	22/30
Albamylin-penicillin G	30/5 units	17/18	Sulfisomazine	500	6/23
Chlortetracycline	10	24/31	Sulfisoxazole	500	7/31
Bacitracin	5 units	2/23	Sulfadiazine	500	8/32
Carbomycin	5	1/23	Sulfamerazine	500	6/23
			Sulfathiazole	500	8/31
Chloramphenicol	10	27/31	Sulfamethylthiadiazole	500	6/23
			Sulfadiazine-sulfamethazine-sulfamerazine	500	5/23
Neomycin-polymyxin B	30/30	7/7	Nitrofurantoin	100	32/32
Erythromycin	10	1/31	Furazolidone	100	22/23
Neomycin	10	7/7	Nitrofurazone	100	14/14
	30	11/11	Nifuraldezone	100	14/14
Penicillin	1½ units	1/31			
Streptomycin	10	15/30			

*Micrograms unless otherwise indicated; **numerator=No. sensitive, denominator= No. tested.

the stool was rated II or III, fecal material was taken aseptically from the rectum, by means of a 6-inch glass test tube speculum and a sterile cotton swab, and transferred to a sterile tube for culture in the laboratory. Bacteriological cultures were made directly from the swab onto eosin methylene blue and brilliant green agar (Difco) plates and incubated at 37 C.

Isolated colonies were then streaked on blood agar plates, the surfaces of which were thoroughly seeded. A variety of antibiotics and chemotherapeutic agents was applied in disc form to comprise *in vitro* sensitivity tests. Reactions of isolates were also obtained in stab and streak cultures on triple sugar iron agar for identification purposes.

Calves that died from scours and those killed in a comatose state were subjected to necropsy and to bacteriological studies. Cultures from the spleens of calves that died were made on blood agar plates.

TABLE 2—Occurrence of Diarrhea and Death Losses for Calves Born at Different Times During the Experiment

Experimental week born	No. of calves	Days (%) of diarrhea of total days on experiment	No. of deaths
1	6	5	0
2	14	20	0
3	8	33	1
4	6	43	4
5	6	37	1
6	10	37	4
7	5	56	0
8	2	42	0
9	4	33	2
10	3	46	0
11	5	47	2
12	2	31	1

Of the 71 calves, 63 scoured. These 63 calves provided 21 replications of a randomized-blocks design for testing the efficacy of two commercially available anti-diarrheal agents. As soon as a calf showed diarrhea, it was randomly assigned to one of the three treatments within a replication. The replications were made up of calves of the same breed in the order in which scours occurred. The three treatments—placebo, neomycin (Neocide*), and furamazone (Entefur*)—were given orally at the recommended daily dose, morning and night, for two days only. There was no further treatment.

RESULTS

Bacterial Isolations.—Microorganisms of the genus *Escherichia* were isolated from the feces of scouring calves in 37 of 38 attempts. Two colonies of organisms considered typical of those routinely recovered from calves with diarrhea were typed† as: (a) coliform intermediate, and (b) *Esch. coli* 0 group (0 x 4 tentative). These coliform-type colonies were isolated from feces of calves with diarrhea 37 times, from the spleen ten times, from the liver once, and from the brain once. A *Salmonella* organism was recovered from the feces four times, from the spleen two times, and from the liver once. A mucoid, spreading, moist colony (not classified) was found in

*Neocide is produced by Jensen-Salsbery Laboratories, Kansas City, Mo.; Entefur is produced by Eaton Laboratories, Norwich, N.Y.

†By Dr. W. H. Ewing, Microbiology Section, Communicable Disease Center, Public Health Service, Chamblee, Ga.

TABLE 3—Occurrence of Diarrhea and Death Losses of Calves Under Experimental Conditions When Treatment Was Limited

Treatment	No. calves per group	Interval from birth to infection (days)	Av. duration of infection (days)	Total No. of deaths	Mortality (%)
Placebo					
Holstein-Friesian	13	2.1	7.6	2	15
Guernsey	5	1.6	13.0	1	20
Jersey	3	1.0	5.1	3	100
Totals	21	1.6	8.6	6	28
Neomycin					
Holstein-Friesian	13	3.5	5.3	2	15
Guernsey	5	1.8	6.9	2	40
Jersey	3	1.0	3.8	2	66
Totals	21	2.1	5.3	6	28
Nifuraldezone					
Holstein-Friesian	13	3.0	4.5	1	7
Guernsey	5	2.8	5.9	0	0
Jersey	3	1.3	8.1	2	66
Totals	21	2.4	6.2	3	14

addition to *Escherichia* on plates in ten instances.

The feces of 2 calves were cultured prior to scouring, and on the day diarrhea first appeared. The spleen of each calf was cultured immediately after death. *Escherichia* organisms were recovered from all of these cultures.

In Vitro Sensitivity Tests.†—Results of the *in vitro* sensitivity tests showed neomycin, neomycin-polymixin B, chloram-

ineffectiveness of the sulfonimides was striking.

Clinical Aspects of the Disease.—Data pertaining to the occurrence of diarrhea and deaths in 13 treatment replications of the Holstein-Friesian calves, five replications of Guernsey calves, and three replications of Jersey calves are tabulated (tables 2-4). In calves with diarrhea, rectal temperatures were elevated 1 to 3 degrees above normal.

TABLE 4—Results of Treatment of Calves with Diarrhea in the 21 Replications of this Experiment

Fate of Calves	Placebo		Neomycin		Nifuraldezone	
	No. of calves	Av. days with diarrhea	No. of calves	Av. days with diarrhea	No. of calves	Av. days with diarrhea
Lived	15	9.7	15	6.5	18	6.2
Died	6	4.8	6	2.5	3	3.5
Total	21		21		21	

phenicol, and albamycin-penicillin G to be highly effective (table 1). Tetracycline and chemically-related antibiotics were efficacious against a majority of the isolates. The nitrofurans tested were inhibitory against all strains except one. The general

†Antibiotics and chemotherapeutics used in sensitivity tests were: albamycin-penicillin G (Alba Penicillin), The Upjohn Co., Kalamazoo, Mich.; chlortetracycline (Aureomycin), Lederle Labs., New York, N.Y.; neomycin-polymixin B (Daribiotic), The S. E. Massengill Co., Bristol, Tenn.; oxytetracycline (Terramycin), Pfizer Labs., Brooklyn, N.Y.; sulfisomazine (Elkosin), Ciba Pharmaceutical Products, Inc., Summit, N.J.; sulfisoxazole (Gantrisin), Roche Labs., Skokie, Ill.; sulfamethylthiadiazole (Thio-sulfil), Ayerst Labs., New York, N.Y.; nitrofurantoin (Furadantin), furazolidone (Furozone), nitrofurazone (Furacin), and nifuraldezone (Furamazone), Eaton Labs., Norwich, N.Y.

There was a low incidence of diarrhea in the initial two weeks of the experiment (table 2) and no deaths occurred. During succeeding weeks, the incidence and severity of the diarrhea increased. Calves died at a younger age as the experiment progressed. The 6 calves that died during the three- to five-week period ranged from 8 to 13 days of age. The 9 calves that died during the six- to 12-week period ranged from 4 to 7 days old.

The gross pathological changes seen were similar to those described in the literature, except that small ulcers with hemorrhagic centers were a constant finding in this study.

Treatment.—The influence of treatment

in the 21 replications of this experiment is shown (tables 3, 4). Even though 60 per cent of untreated (placebo) calves survived, their growth and condition during the 21-day experimental period was generally poor. Scours ceased within five days after treatment in 15 of the 21 calves given neomycin, in 18 of the 21 given nifuraldehyde, and 2 of 21 given placebos. Scours recurred in some calves.

Of the three groups, the calves given placebos showed the highest average number of days with diarrhea and the greatest death losses; those given neomycin had equal losses but the lowest average number of days with scours; while those given nifuraldehyde had diarrhea for an intermediate period but the lowest death loss (tables 3, 4). Under the severe conditions of this experiment, death losses may provide a better estimate of the efficacy of the medicaments used.

DISCUSSION

While the principal genus of bacteria isolated was *Escherichia*, it remains to be demonstrated that this genus represents a primary cause of calf scours. However, these results would seem to indicate that the genus *Escherichia* is involved in this syndrome.

The number of resistant isolates and the significant variation in responses encountered in the *in vitro* sensitivity tests with antibiotics and chemotherapeutic agents emphasized the importance of bacteriological sensitivity testing as a guide for treatment.

It was thought at the outset of this experiment that it might be necessary to induce scours in order to obtain enough calves for a study of therapeutic agents. However, two weeks after 1-day-old calves had been brought to the experimental barn, the incidence of spontaneous infection approached 100 per cent. Not only was there an apparent build-up of the causative agent in the barn after two weeks but, as the experiment progressed, it appeared that its virulence was enhanced, as indicated by an increase in the death losses and by the occurrence of deaths at a younger age. The losses probably would have been greater if the calves had been put into the experimental barn after the experiment was underway a few weeks. The fact that no deaths occurred during weeks 7, 8, and 10

is misleading, since several calves housed initially during these weeks were near death at the end of the experimental period.

The treatment schedule was established with a view toward critical evaluation without giving drugs beyond the economic value of 1-week-old calves. The two-day treatment does not represent the most practical approach to the control of scours, but did appear to be reasonably efficacious under the rather severe conditions of the experiment.

SUMMARY

The epizootiological nature of infectious scours among young calves under experimental conditions was demonstrated in this study.

Escherichia spp. were isolated in a majority of instances when bacterial aerobic cultures were made of material from the rectum of affected calves. Organisms of this genus were most frequently found in cultures from the spleens of calves which died.

Four nitrofurans and several antibiotics were markedly effective against a majority of the isolates tested *in vitro*.

In a limited treatment program, both neomycin-polymixin B (Daribiotic) and nifuraldehyde (Furamazone) were efficacious in the control of scours in young calves.

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Demodectic and Sarcoptic Mange of Dogs Successfully Treated with Aramite

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AN AGENT that will completely and permanently cure mange of dogs, particularly demodectic mange, has been sought for years. Because aramite (2-(p-tert-butylphenoxy) isopropyl-2-chloroethyl sulfite*) was found to be an extremely effective treatment for both follicular and nonfollicular acariasis of mice,^{1,2,3} studies of its effectiveness for mange of dogs were initiated. The results of these studies on dogs are presented in this report.

MATERIALS AND METHODS

Seven adult mongrel dogs, when received, were infested with extensive mange (demodectic, sarcoptic), internal parasites (hookworms, roundworms, tapeworms, whipworms, coccidia), and were in poor condition. They were given a diet of commercial dog food and, during the first 30 days after arrival, were vaccinated against canine distemper and infectious canine hepatitis, treated for internal parasites, and given nonmedicated baths.

The treatment for acariasis consisted of weekly baths for four to 12 weeks in a 2 per cent aqueous suspension of a wettable

powder containing 15 per cent aramite. To insure maximum penetration of the acaricide, 1 Gm. of a wetting agent, sodium alkylarylsulfonate,** was added per liter of suspension.

Four dogs were treated for acariasis immediately after the 30-day conditioning period. Examinations for ectoparasites were made before treatment; clinical records were made before and for 90 days afterward.

Treatment of the remaining 3 dogs was withheld until 60 days after the end of the conditioning period. Examinations for ectoparasites were made before, during, and for more than a year after treatment. Clinical and photographic records were also made.

RESULTS

Four of the dogs were found to be infested with *Demodex canis* and 2 with *Sarcoptes scabiei*. Although the remaining dog appeared to be affected with demodectic mange, no mites were demonstrable.

In every case, improvement occurred within 30 days after the treatment with aramite was initiated; apparent, complete recovery occurred within 90 days.

The clinical records of the controlled cases (those in which treatment was delayed) follow:

Dog 576 had raw, bleeding, and denuded areas on the face, neck, chest, abdomen, legs, and tail (fig. 1). Examination of skin

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**Fisher Scientific Co., Chicago, Ill.

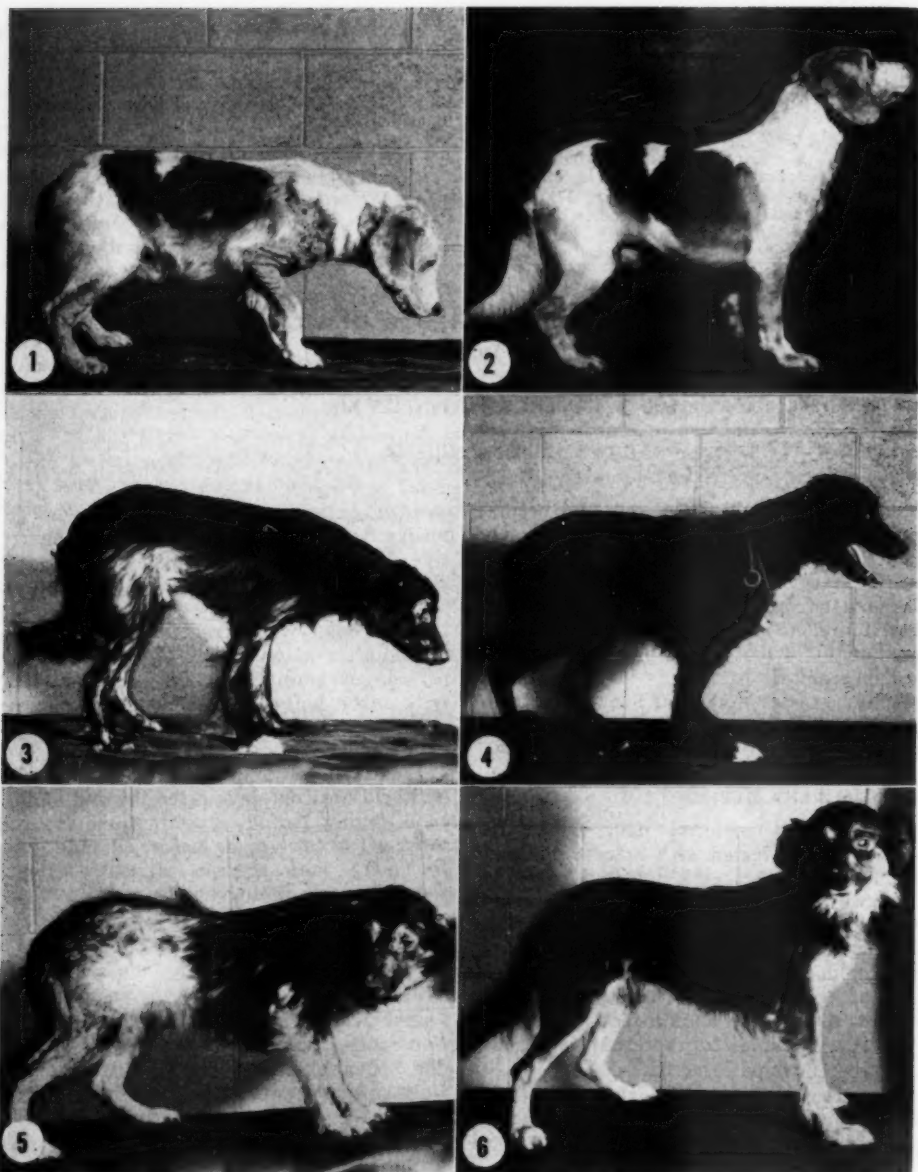


Fig. 1, 2—Dog 576 with demodectic mange before treatment (left), and 90 days after initiating weekly treatment with aramite (right).

Fig. 3, 4—Dog 578 with sarcoptic mange before treatment (left), and 60 days after initiating weekly treatment (right).

Fig. 5, 6—Dog 583 with demodectic mange before treatment (left), and 30 days after initiating weekly treatment (right).

scrapings and fecal specimens disclosed large numbers of *D. canis*. During the 90-day pretreatment period, the denuded areas greatly increased in size and the lesions became more severe. Within one week after the first medicated bath, the lesions appeared less inflamed. After one month, no raw or bleeding areas remained and hair was beginning to reappear; however, skin and fecal examinations remained positive for *D. canis* and therapy was continued. After three months, the denuded areas appeared completely healed and the coat appeared normal (fig. 2); skin and fecal examinations were negative and treatment was discontinued.

Dog 578 had inflamed and sparsely haired areas over the face, sides, and legs (fig. 3). Skin examinations disclosed *S. scabiei*; fecal examinations disclosed no mites. During the 90-day pretreatment period, the affected areas became more denuded and inflamed. Within one month after treatment was begun, the inflammation had disappeared and new hair growth was observable; skin and fecal examinations were negative. After two months, the coat appeared normal (fig. 4); skin and fecal examinations remained negative and treatment was discontinued.

Dog 583 had red, denuded areas on the face, sides, back, and legs (fig. 5). Examination of skin scrapings disclosed *D. canis*; fecal examinations showed no mites. During the 90-day pretreatment period, the denuded areas increased in size and became more inflamed. Within two weeks after treatment was initiated, no inflamed areas remained and the hair was reappearing. After one month, the denuded areas were completely covered with hair (fig. 6); skin and fecal examinations were negative and treatment was discontinued.

All 3 dogs were observed for more than a year after recovery was completed. Fecal and skin examinations continued to show negative results and the skin and pelage remained normal.

DISCUSSION

Dogs with mild cases of mange may recover spontaneously; however, in extensive cases, such recovery is rare.⁵ It is, therefore, highly improbable that all of the dogs described in this report recovered spontaneously. Further, when treatment was withheld, there was a progressive increase

in the size of the area affected and in the severity of the lesions; when treatment was given, the inflammation quickly subsided and the skin and pelage soon returned to normal.

It is also improbable that the observed results were due to bathing, or to the wetting agent because: (1) Bathing in a detergent solution (a common practice) has never been reported as a cure for extensive mange of dogs, and (2) because sodium alkylarylsulfonate alone is ineffective as a treatment for acariasis of mice.⁴

The results obtained indicate that treatment with aramite is effective for both follicular and nonfollicular acariasis of dogs, and further clinical trials appear warranted.

SUMMARY

Seven adult mongrel dogs with extensive mange (4 demodectic, 2 sarcoptic, and 1 undetermined) were obtained from a dog pound and treated by weekly bathing with a 2 per cent aqueous suspension of a wettable powder containing 15 per cent aramite. In every case, improvement was noticed within 30 days; apparent complete recovery occurred within 90 days.

Clinical observations and examinations for ectoparasites were made on 3 of these dogs for more than a year after recovery. Fecal and skin examinations continued to show negative results and no relapses occurred.

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A Congenital Cyclopiian-Type Malformation in Lambs

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A CONGENITAL MALFORMATION in lambs has been occurring with an incidence varying from less than 1 to more than 8 per cent in southwestern Idaho where certain alpine meadow areas are used in the breeding season. Lambs so affected are commonly called "monkey-faced" lambs.

The anomaly is always restricted to the head and varies from a complete cyclops to a slightly deformed upper jaw (fig. 1). Hydrocephalus, harelip, cleft palate, and displacement of the nose may be associated with the facial deformity. With normal length of gestation, an afflicted lamb may be born as a single lamb or as a twin to a malformed or normal one. These monster lambs, which are usually born alive, may survive for a short time in less severe cases, but the usual practice is to kill them at birth.

advanced pregnancy by enlargement of the external genital organs and development of the mammary glands. As gestation continues, the vulva decreases in size and becomes discolored, shading from dark brown to black, while the udder undergoes involution (fig. 3). Frequently, the prepubic tendon ruptures, and the abdomen virtually drags the ground under the excess weight of the growing fetus.

In such ewes necropsied in 1956 and 1957, the lambs were severely malformed. Generally, the lambs were alive but, occasionally, a dead twin fetus was undergoing maceration.

The cranium of the severely malformed lamb is usually characteristically domed, and the cerebral hemispheres are fused into a heart-shaped, thin-walled, fluid-filled cystic sac, with a normal appearing cere-

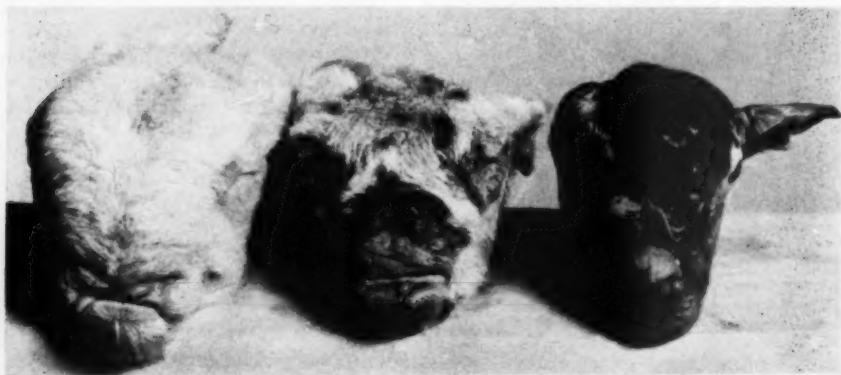


Fig. 1—Cyclopiian anomaly in lambs, indicating variation in degree of deformity.

Associated with this congenital anomaly is a condition of prolonged gestation in which the lamb continues to grow *in utero* to excessive size (fig. 2). The ewe indicates

bellum and brain stem. The olfactory bulbs are absent and, when the eyes are displaced centrally, only one optic nerve may be present. On gross examination, the pituitary body is not found in the severely affected specimens.

As far as could be determined, congenital cyclopiian-type malformation is limited to sheep ranges in southwest Idaho. Each

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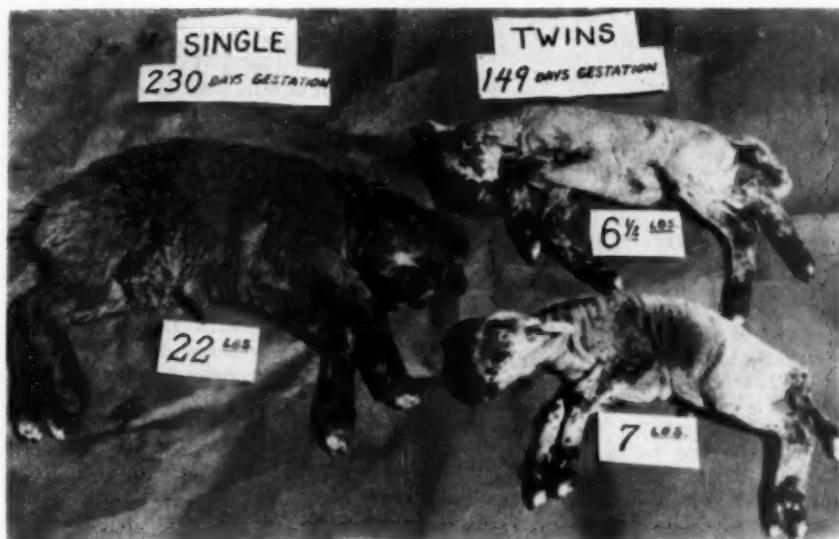


Fig. 2—Excessive-sized, malformed lamb (left) after prolonged gestation, and normal-sized twins (right) after normal gestation.

ranch on which this disease has occurred runs 5,000 to 10,000 head of Lincoln-Columbia crossbred ewes on U.S. Forest Service allotments. Breeding is accomplished in bands of 1,500 to 1,700 in the early part of August, using 3 or 4 purebred Suffolk rams for every 100 ewes. The rams are usually purchased at ram sales, but sometimes a rancher raises his own purebred male stock. The ewes are purchased as yearlings from breeders in Oregon, Montana, Wyoming, and Idaho.

Within a ranch, the incidence of this disease seems to depend on the forest area utilized by a band in the breeding season. This condition has not been observed in bands (usually yearling ewes) pastured on private lowland ranges within the general area for the breeding season.

Based on their observations over a period of 50 years, ranchers believe that the congenital anomaly is not hereditary. Information is presented in this paper to indi-



Fig. 3—Normal ewe (left) and ewe in prolonged gestation (right). Notice pigmentation of vulva and involution of udder.

cate that this condition does not have a simple genetic relationship.

EXPERIMENTAL PROCEDURE

An experiment was devised* for the purpose of examining the possibility that the essentially lethal character of this disease has a simple recessive inheritance. The experimental design required that each of 12 groups of 4 "carrier"*** ewes that had given birth to malformed lambs be bred to a different ram and that the 12 rams be sons of "carrier" ewes. These sheep were transported to Logan, Utah, where this study was carried out.

The 48 "carrier" ewes, ranging from 4 to 8 years old, were randomly allotted to groups of 4 and penned separately. The rams were assigned to the various pens, with the provision that no ram would be bred to its dam. Each ram was fitted with a marking harness and managed in such a manner that ewes in which estrus recurred could be detected. The ram remained in the pen for approximately 90 days or until the ewes ceased to return to estrus. The groups were observed twice daily, and each marking (breeding) date was recorded.

All sheep were fed high-quality third-crop alfalfa hay, free choice, and $\frac{1}{2}$ lb. of rolled barley daily. Water and mineral supplement of equal parts of ground iodized salt and dicalcium phosphate was available at all times.

As the parturition date approached, the ewes were penned in groups of 4 according to their lambing dates for close observation.

RESULTS AND DISCUSSION

The body formation of all lambs was normal in all respects. Of the 47 which conceived, 35 gave birth to twins and 3 to triplets for a total of 88 lambs. All except 2 of the ewes had a normal gestation and parturition; 1 with chronic pneumonia aborted at 126 days; the other, which was in good physical condition, aborted for unknown reasons at 94 days. The aborted lambs were sufficiently developed to determine the absence of body malformations. The individual birth weights ranged from 7 to 16 lb. The distribution of sex was normal.

With the simple recessive hypothesis of this experiment, the probability of obtaining a defective lamb from a mating was one to eight, since all of the ewes and one half of the rams were considered "carriers." The probability of obtaining all normal lambs was less than 1 in 10,000. These results, therefore, indicate that this congenital defect does not have a simple recessive inheritance nor does a more complex genetic hypothesis seem probable.

If this congenital anomaly does not have a genetic basis, the alternative hypothesis must be related to the environment to which these sheep are exposed. Although it is not feasible to describe the exact environment, the observations, over a period of 50 years, of the ranchers with affected animals incriminate the mountain ranges used in the breeding season (particularly the alpine-type meadows). The ranges involved had altitudes up to 10,000 ft. A variety of plant species grow in these areas, and some are known to be poisonous to livestock.

Therefore, within the environment several possible factors exist, any one of which could initiate the development of these malformed lambs: altitude anoxia, a poisonous plant, an excess or deficiency of a nutritional factor, and a mineral element of known or unknown toxicity. Also, one or more of these factors could be interacting with the genetic composition of the lamb to create the anomaly.

The flora of several of the suspected areas was intensively studied, with respect to its mineral composition, but no unusual concentration of a mineral element was detected. A limited feeding program was conducted with several plants of known toxicity without success in reproducing the condition.

On gross examination, no pituitary body was found in the severely malformed lambs of 34 necropsied ewes with manifestations of delayed parturition. Likewise, functional adenohypophyseal tissue was not found in Guernsey calves that were carried beyond their normal parturition date;¹ however, it was found that the adenohypophyseal aplasia was of a genetic character with a simple recessive inheritance.

*With the advice of Dr. C. R. Henderson, Animal Husbandry Department, Cornell University, Ithaca, N.Y.

***Under a simple recessive hypothesis, a ewe that had given birth to a malformed lamb would carry the determining gene.

¹Kennedy, Peter C., Kendrick, J. W., and Stormont, Clyde: Adenohypophyseal Aplasia, an Inherited Defect Associated with Abnormal Gestation in Guernsey Cattle. *Cornell Vet.*, 47, (1957): 160-178.

SUMMARY

A congenital anomaly of a cyclopiian type, called "monkey-face," occurs in range lambs in southwest Idaho. That this anomaly is not related to a simple recessive genetic character was shown by the failure

to reproduce malformations in a breeding experiment in which 48 "carrier" ewes and 12 sons of "carrier" ewes were mated.

The possible relation of an environmental factor to the development of this type of malformed lamb is discussed.

Chlorpromazine Premedication with Pentobarbital Anesthesia in the Rabbit

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PENTOBARBITAL SODIUM given alone results in unsatisfactory anesthesia for surgery in rabbits because of the great variation in response of individual rabbits,⁴ and the short duration of surgical anesthesia.

Favorable results reported with chlorpromazine hydrochloride as a preanesthetic in dogs¹ and cats² led us to investigate its effects in rabbits.

PROCEDURE

The duration of surgical anesthesia was observed in rabbits, using the following signs as criteria of being in surgical anesthesia: the absence of tensing of abdominal muscles upon repeated pin pricking of the abdominal skin from sternum to pubis, combined with the absence of audible vocal sounds upon severe compression of the toes and metacarpals and metatarsals (though withdrawal reflexes were often present), and the appearance of being in deep sleep in lateral recumbency.

A group of 10 New Zealand White female rabbits was anesthetized with 37 mg. per kilogram of body weight of 3 per cent pentobarbital sodium freshly dissolved in 10 per cent ethyl alcohol, given intravenously into the lateral ear vein continuously over a five-minute period.

Another group of 14 New Zealand White female rabbits was preanesthetized with 25 to 100 mg. per kilogram of chlorproma-

zine hydrochloride, divided equally and given intramuscularly in the thighs, followed in exactly 30 min. by injection into the lateral ear vein of 20 mg. per kilogram of 3 per cent pentobarbital sodium freshly dissolved in 10 per cent ethyl alcohol.

RESULTS AND SUMMARY

The induction time and duration of surgical anesthesia were noted and are given in tables 1 and 2.

TABLE 1—Duration of Surgical Anesthesia in Female New Zealand White Rabbits after Intravenous Injection of 3 Per Cent Pentobarbital Sodium (37 Mg./Kg. of Body Wt.) Dissolved in 10 Per Cent Ethyl Alcohol

Rabbit	Weight (kg.)	Pentobarbital Na (mg.)	Induction time (min.)	Duration of surgical anesthesia (min.)
1	2.1	78	10	1
2	2.3	85	10	9
3	2.3	85	α	0
4	2.0	74	α	0
5	2.2	81	16	16
6	1.9	70	α	0
7	2.3	85	3	1 (died)
8	2.4	89	4	30
9	2.1	78	4	24
10	2.1	78	4	2 (died)
Av. of 8 which lived				10.1

The preanesthetic use of intramuscular chlorpromazine hydrochloride in doses ranging from 25 to 100 mg. per kilogram of body weight, followed by 20 mg. per kilogram of pentobarbital sodium given intravenously, results in producing a more tractable animal in which to give the in-

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TABLE 2—Duration of Surgical Anesthesia in Female New Zealand White Rabbits Preanesthetized with Chlorpromazine Hydrochloride Intramuscularly, Followed by Pentobarbital Sodium Intravenously (20 mg./kg. of Body wt.) 30 Minutes Later

Rabbit	Weight (kg.)	Chlorpromazine HCl		Pentobarbital Na (mg.)	time (min.)	Duration of surgical anesthesia (min.)
		(mg./kg.)	(total mg.)			
11	2.2	25	55	44	12	35
12	2.3	25	58	46	11	29
						Av. 32
13	2.2	50	110	44	25	33
14	2.0	50	100	40	18	28
						Av. 31.5
15	1.9	100	190	38	12	57
16	1.9	100	190	38	6	62
17	2.2	100	220	44	3	45
18	2.0	100	200	40	3	56
19	2.3	100	230	46	5	30
20	2.1	100	210	42	4	32
21	2.4	100	240	48	6	30
22	1.8	100	180	36	3	1 (died)
23	2.3	100	230	46	2	33
24	2.2	100	220	44	2	55
						Av. 44.4*

*Does not include rabbit 22 which died.

travenous anesthetic and a much longer duration of surgical anesthesia.

The stimulating effect of chlorpromazine on the respiratory rate and depth³ may be responsible for the success of this combination, since deaths from pentobarbital alone result from respiratory failure.

Further research is indicated with other preanesthetics to improve the safety and duration of general anesthesia in the rabbit.

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Disseminated Coccidioidomycosis Treated with Amphotericin B

Acute pulmonary coccidioidomycosis in man is generally benign and self-limiting. Occasionally, a residual granuloma or cavity in the lung requires surgical removal. The disseminated disease is relatively rare but far more serious, with a mortality of 50 per cent. In 1 of 30 cases, death occurred in two weeks while the others recovered.

Thus, the evaluation of therapy is difficult.

Chloroquine diphosphate seemed beneficial to two patients but had no effect on the next seven.

All of four patients who developed clinical signs of disseminated coccidioidomycosis within a few weeks or months, after being stationed at a military post in western Texas, responded to treatment with amphotericin B. Common features were: fever, pulmonary infiltration with lymphadenopathy, marked weight loss, eosinophilia, *Coccidioides immitis* cultured from the sputum, positive complement-fixation at 1:64 or more, peripheral lymph node involvement including abscess formation, and a positive reaction to coccidioidin skin test in two of the four. Three had granulomata of the skin and two had bone lesions. One was treated orally and three intravenously.

Because of the routine reaction with anorexia, nausea, chills, and fever after each administration, the dose was limited to 50 mg. of amphotericin B (0.7 to 0.9 mg./kg.) over a six-hour period every other day, and given after supper so as not to interfere with food intake. Treatment continued for three to 12 months. Seven abscessed lymph nodes in two patients were aspirated, then injected with 20 to 25 mg. of this drug in 2.5 ml. of water with uniformly favorable results.—*U.S. Armed Forces Med. J.* (Oct., 1958): 1474.

Myxoma of the Heart in a Dog

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A VARIETY of neoplasms located in the anterior mediastinum have been described in the dog. Thymoma, mixed cell sarcoma, teratoma,^{1,2} and others have been reported. The pheochromocytomas, or "heart base tumors," in this region are not cardiac neoplasms but owe their name to their position only. These neoplasms arise in the aortic body, a chemoreceptor organ concerned with control of heart rate.¹

Although neoplasms of the heart muscle or its chambers are rare in the dog, there was a spindle cell sarcoma of the heart reported⁴ in an Australian Shepherd with metastases to the lungs and diaphragm. This paper presents a second case of intracardial tumor in the dog which proved to be a myxoma.

Because intensive study of cardiac myxoma in the dog is lacking, a brief review of such neoplasms in man may be indicated. The majority of cardiac neoplasms in man are metastases. Among the primary neoplasms, about 50 per cent are myxomas.³ It is believed that these tumors arise from the remnants of myxoid tissue that comprise the embryonic endocardium. They are a universal group of neoplasms that occur in a specific part of the heart and have characteristic gross and microscopic appearance. Myxomas are found predominantly in the atria and almost all are intracavitary, overlying the fossa ovalis.

In rare cases, heart tumors may weaken the heart wall, produce heart block, or otherwise embarrass the circulation by their size and position. They may also simulate heart disease by obstructing the valve ostia.⁵ In the presence of heart tumor, electrocardiograms usually show atrioventricular or bundle branch block, or T-wave changes not otherwise explained. Pericardial frictional rub or effusion may be present and the heart silhouette in radiographs shows unexpected size and shape. It is considered significant that digitalis is not beneficial.⁶ When these

signs are found, cardiac neoplasm may be considered.

In man, clinical diagnosis of metastatic heart tumor is rare. Primary tumor of the heart has never been diagnosed in a living patient.³ The prognosis is grave except in the case of a few benign tumors and there is, at present, no adequate treatment for cardiac neoplasm. Surgery, radiotherapy, and chemotherapy have not been sufficiently developed, although life may be prolonged by radiotherapy in malignant lymphoma.

CASE HISTORY

A spayed female Schnauzer, 12 years old, had been treated for minor skin and anal gland infections for five years. She had also been treated with stilbestrol to control urinary incontinence. During a physical examination in 1953, a heart murmur was detected which was loudest on the left side. There was no evidence of heart failure.

On July 11, 1954, she was treated with sodium salicylate and Vitamin C for signs of pain in the left hip. Five days later she had a bilateral, mucoid nasal discharge and a soft cough was present which was not induced by tracheal pressure. Digitalis and aminophylline were prescribed. The nasal discharge subsided but the cough persisted.

In July, 1956, she was admitted to the hospital because of anorexia, emesis, and lethargy. Her cough was worse although she had been given digitalis regularly during the preceding two years. The abdomen was tense, the liver was palpable, and the stools were tarry. Urinalysis revealed a cloudy, amber urine with specific gravity of 1.017 and pH 5.0. Albumin and sugar were negative. Hemoglobin was 15 Gm. per 100 cc. and the leukocyte count was 17,100 per cubic millimeter.

An electrocardiogram showed ordinary sinus rhythm. Both leads 1 and 2 showed premature ventricular contraction with the force of impulse in the right ventricle. The P waves were somewhat higher than normal, suggesting hypertrophy of the right and left atria. Radiographs of the thorax were not made. The diagnosis was con-

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The author thanks Dr. G. Hal DeMay, Brookside Hospital, San Pablo, Calif., for gross and microscopic pathological studies and microphotographs.

gestive heart failure. Her condition rapidly became worse and death followed in two weeks. Twelve hours before death, the right forelimb was lifted as if it were painful.

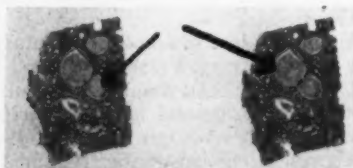


Fig. 1—Gross photograph of histological sections showing pulmonary arteries (arrows) distended by papillary processes embolic from the cardiac tumor in a dog.

Necropsy.—At necropsy there was bilateral pleural effusion. At the level of the second and third divisions, the pulmonary arteries were distended by pinkish-gray neoplastic tissue (fig. 1, 2). This tissue was firmly lodged in the vessels but fine filamentous attachments to the vessel intima were observed.

Upon opening the heart, a tumor mass 5 cm. in diameter was found on the superior aspect of the tricuspid valve (fig. 3). The external surface had numerous papillary processes. The neoplastic tissue was soft and friable and presented a smooth, pale pink, semitranslucent cut surface. It was attached by a pedicle which was 0.5

cm. transversely and 1.0 cm. long. It protruded partially through the orifice of the tricuspid valve. The cardiac chambers were all dilated and there was marked dilation of the right auricular chamber. Obviously, the neoplastic tissue observed in the pulmonary vessels had broken away from the parent tumor in the heart and lodged in the radicles of the pulmonary artery.

The spleen was engorged with blood. The liver was swollen and the margins were rounded. The intestines contained melanoid feces, the wall was congested, and in some areas petechial hemorrhages were observed.

Microscopic Examination.—Sections of the cardiac tumor (fig. 4-7) revealed a papillary or leafy structure composed primarily of mesenchymal tissue in which the component cells were separated by loose, amorphous, faintly staining, myxomatous material. In most areas, the cells were spindle-shaped and unequal in size. Frequently, they showed centrally placed, hyperchromatic nuclei and the cytoplasm at either pole of the spindle contained clear vacuoles of uniform size. In other areas within the mesenchymal stroma, tumor cells were irregularly rounded and showed large, bizarre, hyperchromatic nuclei.

In still other areas, the tissue was reminiscent of embryonic fat, in which the cells showed pleomorphism and unequal size. In some places, the tissue was relatively acel-

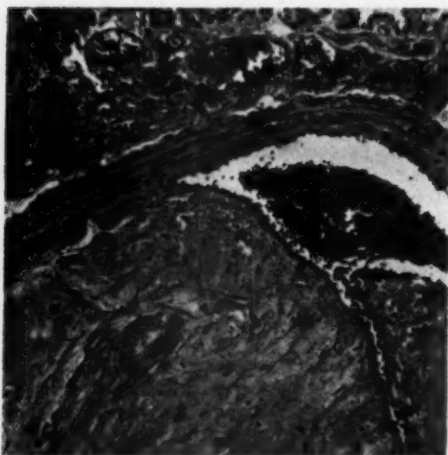


Fig. 2—Section of lung showing pulmonary artery distended by myxomatous tumor which is in all respects similar to that in the heart. H & E stain; x 100.

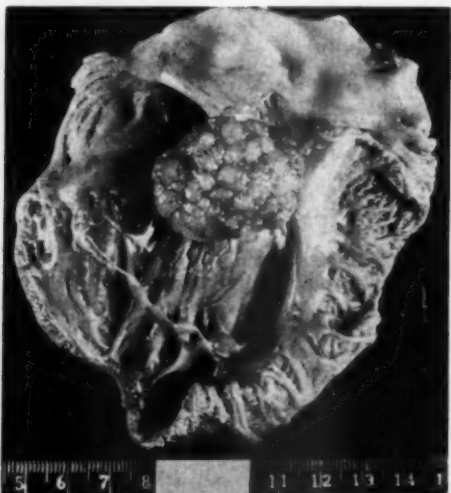


Fig. 3—Polypoid tumor of the heart of a dog, arising from the superior cusp of the tricuspid valve.

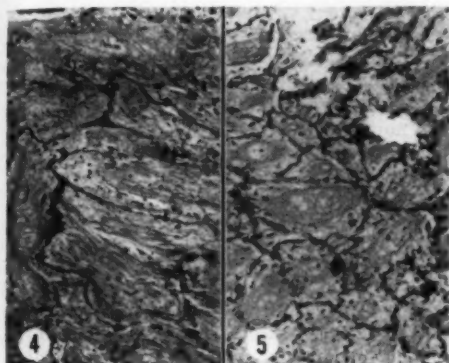


Fig. 4, 5—Representative sections from cardiac tumor in a dog, showing myxomatous structure. H & E stain; x 80.

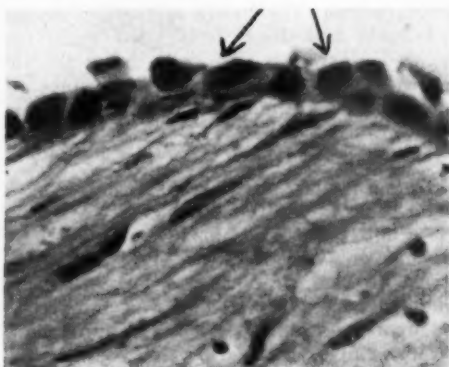


Fig. 6—Section of cardiac tumor of a dog, showing hyperplastic endocardium (arrows) covering its surface. H & E stain; x 320.

lular and appeared to be made up of an amorphous, pink-staining matrix. Some areas of the tumor showed a fairly even network of capillaries while other areas were relatively avascular. Within the mesenchymal stroma there were frequent collections of lymphocytes and homogeneous, eosinophilic, fibrinous material.

Sections of the left ventricle showed the general architecture to be fairly well preserved. Scattered throughout the myocardium, however, were areas in which the heart muscle bundles had undergone change, showing loss of sarcoplasm, and the nuclei were hyperchromatic, pleomorphic, and enlarged. The coronary arteries showed areas of intimal thickening and some of the small arteries near necrotic foci were occluded. The diagnosis was myxoma.

The larger vessels in the lungs were filled with neoplastic tissue similar to the heart tumor. The vessels were distended by the neoplasm which, in some instances, appeared to have invaded the vessel wall. There was some extension of the tumor to the adjacent pulmonary parenchyma which showed compression of the alveoli. The alveolar spaces contained amorphous, pink-staining, high-protein fluid and occasional extravasated erythrocytes. Some areas of the pulmonary parenchyma contained infarcts and numerous neutrophils in various stages of degeneration. Occasional bronchi contained purulent exudate and mucus. The diagnosis was metastatic neoplasms.

There was acute and chronic passive congestion of the liver. The central veins

were markedly distended and engorged with erythrocytes, and this was reflected in the sinusoids throughout the lobules. Distention of the sinusoids resulted from compression atrophy and degeneration of the intervening liver cords. Only faint outlines of the liver cords were identifiable and the appearance was characteristic of extreme passive congestion and ischemic degeneration.

The cells of the adrenal cortex appeared vacuolated and rich in lipid. The blood vessels throughout were engorged with

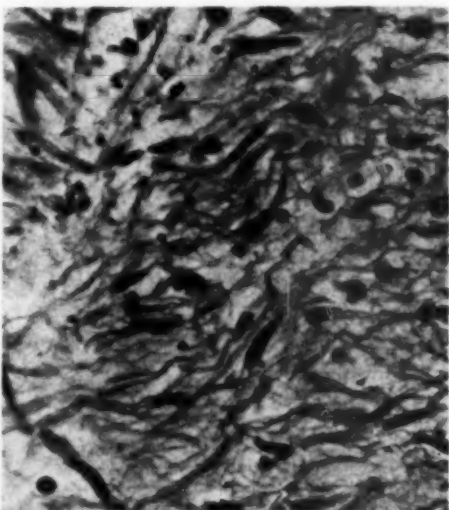


Fig. 7—Section of cardiac tumor in a dog, showing spindle and stellate cells, many of which show vacuolization of the cytoplasm. H & E stain; x 400.

erythrocytes. The lining epithelium of the proximal and distal convoluted renal tubules was swollen. The cells lining the tubules often contained large amounts of eosinophilic granular pigment.

DISCUSSION

Intracardial tumor is a rare cause of heart disease in the dog. It is intriguing to attempt a correlation between the presence of the tumor and the signs and symptoms presented in this case. The heart murmur observed in 1953 was not accompanied by evidence of heart failure; however, a tumor in this location could be expected to produce an abnormal heart sound. It is likely that the murmur coincided with the appearance of the tumor. Approximately one year later, a cough was observed that may have coincided with pulmonary extension of the neoplasm.

The tumor partially occluded the atrio-ventricular orifice, producing a ball-valve type of obstruction to the flow of blood through the heart, giving the clinical appearance of right-sided heart failure. In such cases, passive congestion of the abdominal organs is to be expected.

SUMMARY

A case report is described in which an intracardial tumor in a 14-year-old dog produced signs of congestive heart failure. The tumor, a myxoma in the right atrium, metastasized to the radicles of the pulmonary artery.

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Variability of Sweat Glands in Zebu and Jersey Cattle.—Changes occurred in the volume of sweat glands in Jersey and Zebu-

crossed Jersey cattle as a result of sweating induced by exercise and by warm weather. The Zebus, which had larger sweat glands than the Jerseys, sweat more and their body temperatures rose less and returned to normal faster than the Jerseys.—(*Austral. J. Agric. Res.*, 9:385-390) *abstr. in Vet. Bull.* (Oct., 1958): Item 3406.

Feline Infectious Anemia

Feline infectious anemia is an acute or chronic blood parasitic disease, characterized by emaciation, depression, anorexia, and initial high temperature. A macrocytic, hemolytic anemia develops which produces a characteristic hemogram.

Data were presented on 56 cats experimentally infected with the etiological agent of feline infectious anemia. These data supplement those previously reported for 30 clinical cases of the disease, at which time the name *Hemobartonella felis* was proposed for the organism.

Cats of all ages were readily infected with the organisms by intraperitoneal, intravenous, or oral routes. The effect of splenectomy was minimal in the cat, in contrast to other animals. Transmission of the infective agent to splenectomized rats, mice, and dogs was not successful.

Immunity to the disease was weak or transitory, or both. Relapses occurred and cats that appeared, clinically and hematologically, to have recovered from the disease could be reinfected by injections of the organisms.

Broad-spectrum antibiotics and blood transfusions offer the best method of treatment at present.—[J. C. Flint, M. H. Roepke, and R. Jensen: *Feline Infectious Anemia. II. Experimental Cases. Am. J. Vet. Res.*, 20, (Jan., 1959): 33-40.]

Red Angus Cattle

Occasionally, a red calf is born in a herd of purebred Aberdeen Angus as the result of recessive genes. However, there are several herds of red Aberdeen Angus in this country, Britain, and Argentina. Since black is the dominant color, animals carrying black genes are soon eliminated, and black calves do not occur in these red herds. A "Red Angus Association of America" was formed in 1954.—*Aberdeen-Angus J.* (Sept., 1958): 60.

The Dietary Control of Recurrent Chronic Dermatitis in a Cocker Spaniel—A Case Report

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The problem of recurrent seasonal chronic dermatitis in the dog is of great importance to the veterinarian. Although much has been written on this subject, there are still many unanswered questions concerning its cause, treatment, and prevention.

CASE REPORT

A female Cocker Spaniel, 9 years old, had been presented to my hospital regularly every summer for the past five years for treatment of a chronic dermatitis and chronic external otitis. She was irritable and annoyed when handled, but otherwise would lie around all day, except for frequent periods of whining, scratching, and shaking her head.

Local treatment of the skin and ears included various medicated baths, topical glucocorticoid therapy, and a large number of combination ointments of antiseptic and anesthetic mixtures. This treatment was merely palliative, as the condition persisted throughout the summer. With the advent of winter, both the dermatitis and the otitis gradually disappeared.

In April, 1957, the dog was brought to the hospital with a history of excessive thirst and frequent urination. Analysis of the urine disclosed a specific gravity of 1.010 and slight amounts of albumin which, with the clinical changes, was indicative of nephritis.

She was given penicillin-triple sulfonamide tablets and one of the high-quality protein diets (Atlas Rx Nephrodiets*). When examined 14 days later, the clinical signs had disappeared, the urine showed no trace of albumin, and the specific gravity was 1.020. The antibiotic treatment was discontinued, but the animal has been maintained on the diet.

Since then, she has not been brought to

the hospital, and the owner reports that for the past two summers there has been no recurrence of the skin and ear condition. Her coat is shiny and full, with little shedding, and she is active and alert.

DISCUSSION AND CONCLUSION

While conclusions should not be based on this 1 case, the diet apparently was important in preventing recurrence of the dermatitis and otitis. However, many other dogs which have had a history of recurrent seasonal dermatitis have been given this diet with either similar beneficial effects, or a decrease in the severity of the condition.

Ketosis and Sodium Propionate

The Guernsey herd at the University of Delaware, which had a history of a high incidence of ketosis, was divided into control and treatment groups so the ketosis histories were as similar as possible. The 11 cows which calved twice during the experiment were changed to the opposite group for the second calving.

The treated cows were given 2 oz. of sodium propionate twice daily by drench for six weeks postpartum. The incidence of ketosis was low in both groups, but it was as high in the treated as in the control group. There was a tendency for the treated cows to be lower in blood ketones and higher in blood glucose, but the differences were not significant. The higher milk production by the cows, given sodium propionate was significant.—*J. Dai. Sci.*, 41, (Nov., 1958): 1580.

Oat Hay, a Legume Bloat Preventive

Excellent quality oat hay, when fed during the night at an average of 12 lb. per cow, significantly reduced the incidence and severity of acute legume bloat. There are three possible reasons for this activity: a formation of froth may be physically prevented; this hay may contain an antifrothing agent; or its scabrous nature may stimulate rumen motility and eructation by reflex action. All three factors may operate simultaneously.—*J. Dai. Sci.*, 41, (Nov., 1958): 1557.

Dr. Foster is a small animal practitioner in Far Rockaway, N.Y.

*Atlas Rx Nephrodiets is produced by Atlas Canine Products Inc., Glendale, N. Y.

Editorial

The Relation of the Veterinarian to the Feed Industry

Guest Editorial

For eight years, the American Veterinary Medical Association has had a representative on the Nutrition Council of the American Feed Manufacturer's Association. Through this close association, both groups have gained in understanding and appreciation of the roles each has to play in profitable production of livestock.

This close liaison at the national level is being felt with increasing force. Many manufacturers of feed for livestock, poultry, and pets employ veterinarians full-time on their research, production, and marketing staffs. This practical cooperation has shed further light on the benefits of working together.

Five years ago, in several states, the feed industry and the veterinary profession began holding joint nutrition conferences.

Three years ago, a group of veterinarians in private practice and their colleagues employed by feed manufacturers formed the American Association of Veterinary Nutritionists. The fact that over 100 veterinarians have subsequently become members is indicative of professional interest in animal nutrition.

The veterinary medical profession has long recognized the importance of nutrition in animal health. It is an integral part of the curriculum in two years of preveterinary college work and four years of professional training. But to keep abreast of advances in all subjects, the veterinarian must be ever alert and conscientious in continuing his education beyond the formal school years. Unless his practice requires constant application of knowledge in nutrition, he finds it difficult to keep up with advances made in the feed industry.

MEDICATED FEEDS

Medication in feed is a complicating factor. When feed additives are properly used, they can improve the net performance of some animals and poultry and thereby contribute to the primary objectives of the veterinary medical profession and the feed industry. Both parties exist

to serve a third—the animal owner and his live property, whether it be cattle, sheep, swine, poultry, or a pet. Our reason for existence, and our right to demand support, depends on how well we serve the animal owner by improving the value of his property.

Good, nutritious feed is essential to high production and satisfactory performance in animals. But even the best of feed cannot eliminate disease. Furthermore, the nutritional requirements of a sick animal differ from the requirements of healthy stock.

The veterinarian must diagnose and treat the diseases. He has an obligation to use his clinical know-how and available laboratory facilities to get an accurate diagnosis, to institute appropriate treatment, and to prevent the spread of disease within and beyond the herd or flock.

The feedman's job is to provide the livestock owner with feed products and feeding programs designed to yield the greatest economic gain and to maintain animals in the best of health. The veterinarian's job is to develop and participate in programs designed to control diseases. Both assist in the maintenance of health through sound nutrition.

COOPERATION

Since these roles are not distinct, the concern of both groups for animal health has led to encroachment and overlapping. This is an area where conflict between the feed industry and the profession can arise.

The feedman who attempts to diagnose disease in herds—frequently without seeing the infected animal—or prescribes a feed as treatment, is practicing veterinary medicine without training or license. On the other side of the picture, the veterinarian who blames a herd's condition on the feed, without thorough investigation, is not giving his best in veterinary service to the owner. Conflicts, when they occur, have generally taken place at the community level.

Isn't it better to get together in meetings to exchange views and information before conflicts develop? The feed industry needs to know more of the nutritional requirements of animals in poor health and

From an address to the Midwest Feed Manufacturers Assoc., at Kansas City, Mo., Dec. 8, 1958, by Dr. R. E. Rebrassier.

with specific infections. The veterinarian needs to know more of the science of nutrition so he can apply modern feed knowledge and formulations in his service.

Research has accomplished much, but the surface is only scratched. Both the feed industry and the veterinary medical profession can benefit from research on the metabolism of animals under varying conditions and their nutritional requirements in sickness and in health.

Coordination of research in basic nutrition by the national organizations can save duplication of effort and lay the base for advancement in applied research. Information can be channeled to publications reaching both, so the veterinarian and feed dealer have a better understanding of what is being done.

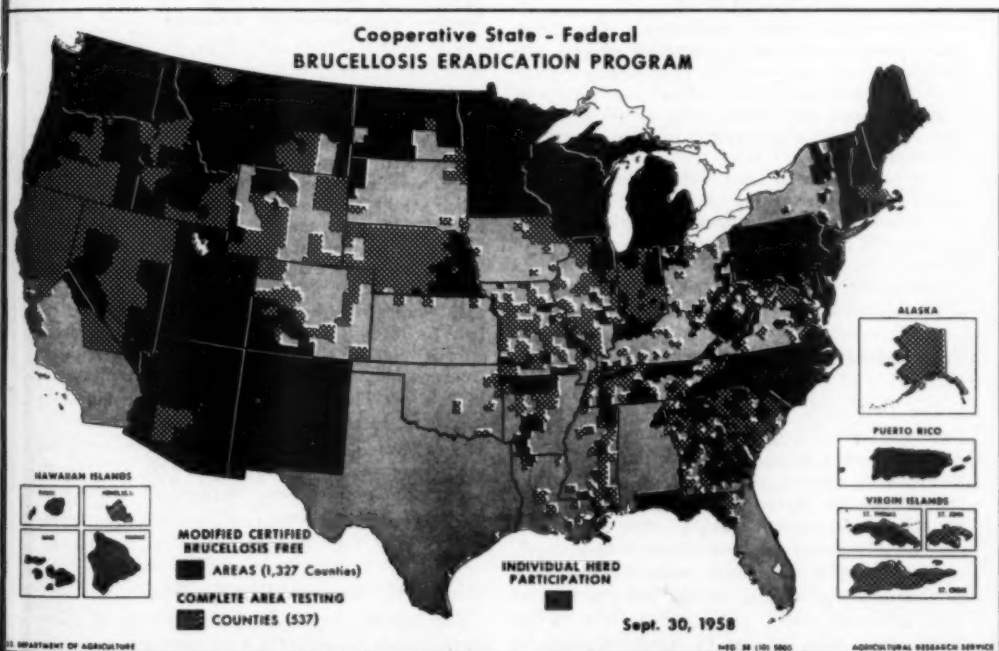
This country has the most efficient livestock and poultry industry in the world. Yet, almost \$3 billion is lost annually to inefficiency caused by disease. Profit margins in agriculture have shrunk to a point where this loss cannot be absorbed or shrugged off indefinitely.

Constructive action against livestock parasites and disease is essential to our survival in a world where famine is commonplace and three-quarters of the people are undernourished.

More joint committees and joint conferences should, and must, be encouraged. The benefits of cooperation so far outweigh the cause of conflict that these causes must be adjusted. Either group can stand without the other, but progress demands we stand together.

Result of Brucellosis Eradication Program—September 30, 1958

Cooperative State - Federal BRUCELLOSIS ERADICATION PROGRAM



Since June, 1954, the number of modified, certified brucellosis-free states has increased from three to 15 states and Puerto Rico. During this four-year period, nearly 63 million cattle were tested, compared with about 30 million in the four years prior to June, 1954.

The percentage of cattle which reacted to the blood test decreased from 2.6 in fiscal 1954, to 1.6

per cent during fiscal 1958. Of those which were positive for brucellosis, only 51.3 per cent were slaughtered in 1954; in 1958, 97.7 per cent of the reactors were slaughtered.

Calf vaccination, with strain 19, increased from about 13 million in the four years prior to June, 1954, to 21 million in the past four years.—U.S.D.A.

Current Literature

Abstracts

Rabbit-Adapted Foot-and-Mouth Disease Virus

Serial passage by intraperitoneal injection of young rabbits and harvest of muscle tissue led to adaptation of one strain of each of the Vallée O, Vallée A, and Waldmann C type strains of foot-and-mouth disease virus; the 137th, the fortieth, and the fortieth passages, respectively, were reached. One hundred per cent mortality occurred in 1- to 2-day-old rabbits within 24 hours. By gradually increasing the age of the rabbits during passaging, it was found possible to infect those 51 days old. The highest virus content occurred in muscle, titers of $10^{5.6}$ to $10^{6.9}$ being obtained. With the O type strain, high serial passage was accompanied by a marked reduction in the pathogenicity for cattle.—[R. G. Cunha and E. A. Eichborn: *Studies on Rabbit-Adapted Foot-and-Mouth Disease Virus. I. Propagation and Pathogenicity*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 133-137.]

Follicular Acariasis Treatment

Three weekly topical applications of a 2 per cent aqueous suspension of a wettable powder containing 15 per cent aramite [2-(p-tert-butylphenoxy) isopropyl-2-chloroethyl sulfite] combined with a wetting agent were found to be completely effective against follicular acariasis of mice caused by *Psorergates simplex*.

The use of mice infested with *P. simplex* as test animals for the screening of compounds for topical as well as systemic acaricidal activity was suggested.—[R. J. Flynn: *Follicular Acariasis of Mice Caused By Psorergates Simplex Successfully Treated with Aramite*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 198-200.]

Experimental Strongyloidiasis in Sheep and Goats

The pathogenic potentialities of *Strongyloides papillosus*, the intestinal threadworm of domestic ruminants, were investigated by exposing 8 lambs to single, cutaneous applications of 25,000 to 1,000,000 infective larvae and 2 kids to 100,000 and 300,000 larvae, respectively.

Clinical signs of strongyloidiasis, which developed from these infections, were anorexia, loss or retardation in weight, anemia, difficult respiration, abnormal stools, and polyuria. Five of the lambs which were infected by larval exposures of 100,000 or more and 1 kid exposed to 300,000 larvae died 13 to 41 days after infection; the other 4 infected animals were less severely affected and survived. The prepatent period of the parasite was about nine days and the peak of egg production occurred 15 to 18 days after infection.

Only parasitic females of *S. papillosus* were recovered from the infected animals at necropsy. In the fatal cases, a severe enteritis was present in the duodenum and jejunum, which also contained much fluid, catarrhal exudate. Terminal lung changes, characterized by pneumonitis and emphysema, were observed in only 1 animal.—[J. H. Turner: *Experimental Strongyloidiasis in Sheep and Goats. I. Single Infections*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 102-110.]

Immunizing Guinea Pigs with Flury Vaccine

Guinea pigs, vaccinated by intramuscular injection of Flury vaccine, were challenged by the intracerebral route with a strain of fixed rabies virus on postvaccination days 8, 15, 22, and 31. Resistance to this challenge was either negligible or nonexistent. Guinea pigs vaccinated in the same way, but challenged with fixed virus by the intramuscular route, appeared to have better protection. Serum-neutralization tests proved the presence of fixed virus-neutralizing antibodies in the serum of vaccinated guinea pigs. These experiments indicate that challenge by intracerebral inoculation of fixed virus is of no value in testing Flury vaccine in guinea pigs.—[C. Huygelen and J. Mortelmans: *Attempts to Immunize Guinea Pigs with Flury Vaccine and Subsequent Challenge with Fixed Rabies Virus*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 145-147.]

Bactericidal Substances in Rabbit Uteri

Bactericidal substances in cell-free *Escherichia coli*-induced inflammatory exudates from rabbit uteri were not identical to the bactericidins in blood serum of rabbits; the factors in uterine exudates possessed greater thermostability. Bactericidal factors similar of those in cell-free exudates were present in extracts of leukocytes collected from *E. coli*-inoculated uteri of estrous rabbits; they were also present in leukocyte-free exudates from silica-injected rabbit uteri, exudates from estrous rabbits being more bactericidal than those from pseudopregnant rabbits. These results tend to rule out blood serum or *E. coli* inoculums as sources of bactericidal factors in uterine inflammatory exudates, but indicate that leukocytes could be the source of these substances.—[H. W. Hawk: *Investigations Concerning Bactericidal Substances in Rabbit Uteri*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 206-212.]

Growth of Newcastle Disease Virus

The growth rates and growth patterns of Newcastle disease virus (NDV) were studied in chorio-allantoic membranes suspended in Tyrode's solution and incubated at various temperatures. The virus grew best in tissue cultures incubated at 42 C.

Growth of NDV (Roakin-NJ-1946) was limited to incubation temperatures between 33 and 42 C.

The production of hemagglutinins in embryonating eggs infected with this virus followed a log-linear response to temperature.

The growth patterns of strains GB, B1, and Roakin of NDV, in tissue cultures incubated at 37 C., did not differ significantly from one another. Pronounced differences in the growth rates of these three virus strains at different temperatures of incubation were not demonstrable. The production of virus in tissue culture followed a log-linear response to temperature after 36 hours of incubation.

Hemagglutinin production was not demonstrable in tissue cultures of any of the three virus strains.—[F. Zuscov, R. P. Hanson, and C. A. Brandy: *Influence of Temperature on the Growth of Newcastle Disease Virus in Chorioallantoic Membranes Suspended in Tyrode's Solution*. *Am. J. Vet. Res.*, 20, (Jan., 1959): 111-115.]

Foreign Abstracts

Atrophic Rhinitis

This disease is widespread in Uzbekistan, causing a mortality of 80 to 90 per cent among little pigs in some droves. In pigs 2 to 7 weeks old, the catarrhal rhinitis is accompanied by enteritis which causes many deaths. After the survivors recover from the enteritis at 3 to 7 months of age, the picture is dominated by chronic suppurative necrotic rhinitis with its complications—sinusitis, otitis, and meningitis. Only 10 to 15 per cent of infected animals develop facial deformity.

Trichomonas suis was demonstrated in great numbers in nasal washings of 90 per cent of sick pigs. The pigs were restrained and stimulated to sneeze by the injection of 5 to 10 ml. of warm water or physiological saline solution. The expelled exudate was caught in a dish and examined immediately under the microscope. The authors warn that the organism can not be seen if the exudate is allowed to cool. Trichomonads were also numerous in scrapings from the large intestines of pigs that died of enteritis. The authors do not mention the incidence of trichomonads in normal animals from disease-free farms.

Bacteriological culture of nasal washings yielded several bacteria which the authors regarded as secondary agents.

In infection experiments, the disease was produced by intranasal inoculation of pure cultures of *T. suis*, or of *T. suis* and a mixture of bacteria, but not by inoculation of the bacterial cultures alone.

The recommended control measures are quarantine, sanitation, isolation, and repeated examination of nasal washings from all swine on the farm. The nasal exudate should be cultured in addition to microscopic examination.

Infected animals are treated by nasal lavage with "iodine" (KI ?) 1:500, and a bactericidal agent, "furacillin," every five or six days until nasal wash-

ings are negative. Prophylactic treatment with iodine, 1:500, is begun at 10 days of age.—[A. V. Cberkasova, N. M. Samorodov, and N. K. Shevchenko, *Uzbek Agric. Inst.: Infectious Atrophic Rhinitis of Swine*. *Veterinariya*, 35, (Sept., 1958): 51-58.]—ROBERT E. HABEL.

Tissue Therapy in Papillomatosis of the Udder

The tissue preparation was made from bovine liver held for six or seven days at 2 to 4 C., diced, boiled, ground, strained, autoclaved, and tested for sterility.

The preparation was injected subcutaneously in the region of the triceps muscle. The dose was 20 to 25 ml., repeated at ten-day intervals.

Thirty-four cows with warts ranging up to the size of a hen's egg were treated. The warts disappeared from 11 cows after three injections; from 22 cows after four injections; and from 1 cow after seven injections.

The retrogression of the papillomata was followed histologically and was shown to be a process of increased keratinization which continued until the papilloma no longer contained living tissue and fell off. If treatment was stopped before the papillomata had disappeared, they increased in size again.—[L. G. Prusova, *Kiev Vet. Inst.: Tissue Therapy in Papillomatosis of the Udder*. *Veterinariya*, 35, (Nov., 1958): 41-43.]—ROBERT E. HABEL.

Books and Reports

Textbook of Surgery for Veterinarians

The twelfth edition of this textbook, published in 1934, has been revised and improved and published in 1958 as the thirteenth edition. It is a good proof of the importance and popularity of this special field of veterinary medicine. The first chapter gives details of ophthalmology for both large and small animals. It deals with pathological conditions of the eyelids, eyes, and orbits. The following chapters describe systematically, from the surgical point of view, all parts of the body starting with the head and continuing with the neck, thorax, and abdominal organs, including the urinary and reproductive organs.

Special, well-organized chapters deal with numerous disorders of the front and hind extremities including disorders of hoofs, claws, and toes.

This new edition contains some new parts and is supplemented with new, instructive illustrations. It is written clearly and may serve as a good textbook for veterinary students and practitioners.—[*Textbook of Special Surgery for Veterinarians and Students (Lehrbuch der Speziellen Chirurgie für Tierärzte und Studierende)*. By E. Silbersiepe and E. Berge. 13th ed. 596 pages; 625 illustrations. Ferdinand Enke, Stuttgart, Germany, 1958. Price \$16.]—F. KRAL.

THE NEWS

Late Developments of the International Veterinary Congress

Much Interest Shown in Madrid Sessions and Post-Congress Tours

With only three months to go before the XVIth International Veterinary Congress convenes, May 21-27, plans for U.S. participation are rapidly taking shape. . .

Of the veterinarians from this country who have been selected by the Organizing Committee in Madrid for the scientific program, six will present "main" papers before either the plenary (general) sessions or the section meetings, and 25 additional "short" papers by U.S. authors have

been submitted. It is expected that there will be at least one scientific exhibit by a U.S. participant.

A sizable delegation of U.S. veterinarians and their wives have made reservations for travel to Madrid and for the post-Congress tours arranged by the U.S. Committee in collaboration with the Travel Service Bureau (*see* the JOURNAL, Oct. 15, p. 282; and Dec. 15, p. 624).

The latest report from the Travel Service Bureau states that accommodations for travel to

Bull fighting to the Spaniard is what baseball is to the American, and every Sunday from early spring to late fall, the bull rings of Spain are filled with fans who come to watch the colorful spectacle.





Calleo Square in downtown Madrid. The building at the left is the Hotel Valencia.

Madrid by sea or air are still available but that early reservations are necessary to avoid disappointment; accommodations by air are getting "tight." Persons interested in joining this fine group from the States should contact Mr. Nelson M. Jost, Travel Service Bureau, 32 Dedham Ave., Needham 92, Mass., immediately. Or, a brochure describing travel arrangements to Madrid and the post-Congress tours can be obtained by writing to: U.S. Committee, XVIth I.V.C., c/o AVMA, 600 S. Michigan Ave., Chicago 5, Ill.

This strange, unfinished Church of the Holy Family in Barcelona (above), one of the last works of the eccentric Spanish architect, Gaudi, is a popular tourist sight.



R. C. V. S. Invites Overseas Veterinarians to Attend Special Exercises on June 2

Veterinarians attending the XVIth International Veterinary Congress in Madrid, May 21-27, and later touring Europe and the British Isles, are invited to attend the annual Royal College of Veterinary Surgeons Day which will be celebrated in London on Tuesday, June 2, 1959.

The day will begin with a choral and commemoration service in the Queen's Chapel of the Savoy, followed by a luncheon in the Savoy Hotel. In the afternoon, the United Kingdom's annual general meeting of the veterinary profession will be held, with a presentation of awards. There will also be an exhibition portraying the founding of the Royal Veterinary College of London, in 1791.

Professor T.J. Bosworth, R.C.V.S. president, invites all visiting veterinarians and their wives to attend any or all of the ceremonies. Since room is limited and admission to the luncheon is by ticket only (£3.3s. per person), and for the service and annual meeting by reserved seats only, advance reservations are advisable; these are obtainable from the Registrar, Royal College, 9 Red Lion Square, London, W.C.1.

s/W. G. R. OATS, Registrar.

U. S. D. A. to Hold Second Tuberculosis Eradication Conference

Plans are being formulated to hold a second Tuberculosis Eradication Conference at Kansas State College in August for both state and federal veterinarians. Sponsored by the Animal Disease Eradication Division of the U.S.D.A.'s Agricultural Research Service, this meeting will be similar



Veterinarians who attended the Tuberculosis Eradication Conference sponsored by the Animal Disease Eradication Division, U.S.D.A., at East Lansing, Mich., June 15-20, 1958.

Front row (left to right)—W. D. Yoder (Iowa); J. A. Echegaray (P. R.); R. W. Merriman (Calif.); E. F. Cushing (Nev.); N. G. Bearden (Miss.); A. E. Lewis (Can.); E. A. Schilf (Wis.); R. W. Page (Minn.); H. H. Hall (Ky.); P. F. Bruce (Mich.); W. K. Walker (Idaho).

Second row—S. D. Culver (Ala.); A. M. Wiggins (Ala.); J. J. Martin (D. C.); F. C. Mau (Ill.); D. B. Anderson (Tenn.); G. W. Klover (Kan.); H. M. Sweeney (Vt.); R. M. Scott (Mich.); Asa Winter (Mich.); C. A. Love (Okla.).

Third row—B. E. Knisely (Ohio); H. R. McKinney (N. J.); O. D. Corson (Mich.); H. S. Smith (Pa.); R. K. Brabrook (Wash.); K. Erickson (Ore.); W. W. Bird (Ind.); H. H. Hoyt (Minn.); R. C. Knowles (Wyo.); J. Traum (Calif.); G. W. Bragdon (Maine).

Fourth row—G. A. Baker (S. Car.); D. W. Claybaker (Ariz.); J. C. Donham (Ohio); P. A. Chaloux (N. Dak.); W. R. Strieber (W. Va.); E. F. Finke (Mo.); A. M. Stefanski (La.); J. E. Williams (D. C.); S. J. Couger (S. Dak.); W. E. Ivey (Colo.); W. Mathey (Mich.); R. Martin (Mich.).

Fifth row—F. W. Wassenaar (Fla.); W. Chaney (D. C.); C. W. Wilder (N. Y.); L. F. Van Gorder (Mo.); L. F. Good (Mo.); W. G. Askew (Neb.); K. E. Peterson (Wis.); J. D. Winward (Utah); M. Kagan (N. M.); J. M. Wooldridge (Ga.); H. G. Wixom (Calif.); P. W. Miner (Mass.); Dean W. A. Hagan (N. Y.); J. Canty (Vt.); Dean I. A. Merchant (Iowa State); L. E. Bowen, Jr. (Va.); L. A. Pierce (Iowa).

Sixth row—R. L. Cowen (Mont.); A. W. Langmuir (Ga.); R. J. Rodgers (Texas); R. H. Shay (Ark.); J. M. Fancher (N. H.); P. D. Fichandler (Conn.); M. J. Kemm, Jr. (Ind.); L. M. Becton (N. Car.); G. C. Richardson (Ill.); M. J. Twiehaus (Kan.); R. D. Barner (Mich.); H. W. Johnson (D. C.); L. C. Ferguson (Mich.); A. F. Ranney (D. C.); J. H. Steele (Ga.).

Those absent when picture was taken—Dean W. W. Armistead (Mich.); J. H. Campbell (Mich.); C. L. Davis (Colo.); W. H. Feldman (D. C.); C. L. Hendee (Mich.); A. B. Larsen (Ala.); W. L. Mallman (Mich.); G. S. McIntyre (Mich.); C. K. Mingle (D. C.); F. J. Mulhern (D. C.); J. A. Myers (Minn.); C. D. Smith (Mich.); H. R. Smith (Mich.); R. K. Somers (D. C.); R. L. West (Minn.); C. D. Van Houweling (D. C.).

to the initial one held for federal regulatory veterinarians in June, 1958, at Michigan State University.

The conference will be addressed by recognized leaders in the fields of education, research, epizootiology, and regulatory activities. Among its objectives are: to revitalize and reorient the co-operative tuberculosis eradication program, to standardize professional techniques, and to attain greater uniformity in program planning and requirements.

s/F. MULHERN, Acting Director.

Ralston Purina Grants Ten Awards Under Fellowship Program for 1959-1960

Ten fellowships, of \$1,800 each, will again be granted for graduate study in agricultural research for the 1959-1960 school year.

These awards will be open to students at the University of Alaska as well as to students of

land-grant colleges throughout the United States and three agricultural colleges in Canada.

Three fellowships will be awarded in animal husbandry, three in dairy husbandry, three in poultry husbandry, and one in veterinary science. Application blanks may be obtained by writing to the Ralston Purina Research Awards' Committee, c/o Mr. J. D. Sykes, Ralston Purina Company, St. Louis 2, Mo. Applications must be in the hands of the committee by March 1.

Public Health Service Regular Corps Examination for Veterinary Officers

A competitive examination for appointment of veterinary officers to the Regular Corps of the U.S.P.H.S. will be held in various places throughout the country on March 31-April 3, 1959. Appointments apply to the ranks of assistant and senior assistant, equivalent to the Navy ranks of lieutenant (j. g.) and lieutenant respectively.

Requirements for both ranks are U.S. citizenship, at least 21 years of age, and graduation from a recognized veterinary school. To qualify as an assistant veterinarian, seven years of collegiate and professional training are necessary; for the rank of senior assistant veterinarian, ten years of collegiate and professional training are required.

Application forms may be obtained from the Surgeon General, Public Health Service (P), Washington 25, D. C. The deadline for receipt of these forms is February 20.

California Offers Continuing Postgraduate Education in Veterinary Medicine

The Department of Continuing Education in Medical and Health Sciences at the School of Medicine, University of California, in cooperation with the Southern California V.M.A., has developed a postgraduate course for veterinarians. These integrated courses in various areas of veterinary medicine have been offered at the University of California Medical Center, in Los Angeles, since 1956.

The courses are usually held one evening a week and are presented semiannually over a period of six to ten weeks. The response of local veterinarians has been excellent. As an example of the structure of these course programs, "Principles in Veterinary Surgery," offered last year from October 6 to November 20, was limited to 28 participants and required an enrollment fee of \$70. Instruction was provided by lecture, direct demonstration, specially prepared slides, and by supervised surgery in the laboratory.

Specifically, this program was offered by the following: Drs. Robert M. Cello—thoracic surgery; Robert Sinskey (M.D.) and Ralph C. Vierheller—ophthalmic surgery; Norman McBride—orthopedic surgery, particularly of the femor-patellar tibial joint; Bennett J. Cohen—physiology of intestinal obstruction; and W. K. Riddell—intestinal anastomosis. In addition, other veterinarians have participated in some other of the School's courses.

Dr. Bennett J. Cohen (COR '49), University of California, School of Medicine, was course chairman. Additional information may be obtained by writing to Dr. Thomas Sternberg (M.D.), Assistant Dean, Continuing Education in Medicine and Health Sciences, University of California Medical Center, Los Angeles 24, Calif.

Colonel Jennings Now in Chicago

Colonel William E. Jennings, who up until last October was chief veterinarian of the U.S. Army Europe with headquarters in Heidelberg, Germany, is now chief of the Veterinary Division, Fifth Army Headquarters in Chicago. He had spent three years in his European assignment before beginning his new position, December 10. It is Colonel Jennings' task to direct the veterinary activities of the Fifth Army area which encompasses 13 states.

With nine years of service on the AVMA Council on Education, serving most of that time as chairman of the Committee on Foreign Veterinary Colleges, Colonel Jennings had the opportunity while abroad to visit 25 veterinary colleges in



U.S. Army Photograph
Colonel William E. Jennings

Europe, including the Scandinavian countries, Holland, Belgium, Germany, Austria, France, Italy, and Switzerland. He commented particularly on the advances made since the war in rebuilding and providing facilities for the veterinary student and on the genuine courtesy that is accorded to American veterinarians visiting these countries.

Colonel Jennings has spent 25 years of active service in the Army, four years of which was spent in India and China during World War II.

AMONG THE STATES AND PROVINCES

Arizona

State Association Meets.—The annual meeting of the Arizona V.M.A. was held at the Yuma Country Club, December 7-9.

Dr. Benjamin C. Ham (COL '52), Yuma, was elected Arizona's Veterinarian of the Year and awarded a plaque.

Among the participants and their papers were: Drs. K. W. Smith, Colorado State University—canine distemper, skin problems; Leonard W. Dewhirst, University of Arizona—parasites of cattle; L. Keith Wayt, Colorado State University—foot ailments in bulls, newborn calves; Richard L. Ott, State College of Washington—feline virus diseases, ablation of the canine ear canal; C. H. Ozanian, Bellflower, Calif.—bovine practice; Marvin J. Twiehaus, Kansas State College—field problems, leptospirosis; Norman L. McBride, Jr., Pasadena, Calif.—surgical techniques; and Ned W. Rokey, University of Arizona—clinical laboratory diagnostic procedures.

The Association's officers for the ensuing year are: Drs. Raymond E. Reed, Tucson, president; Jack P. Fuller, Phoenix, president-elect; and Walter Condon, Tucson, secretary-treasurer.

s/NED W. ROKEY, *Executive-Secretary.*

Georgia

Dr. Hayes, Part of African Expedition.—An expedition including Dr. Frank A. Hayes, School of Veterinary Medicine, University of Georgia, left for Africa last January.

The group will evaluate various conservation techniques, including the propulsive administration of chemical agents for restraining animals, in Kenya, Uganda, and the Belgian Congo.

Sponsored by the Florida Zoological Society in cooperation with a movie syndicate, the group can be reached by writing to Barclay Bank, Campella, Uganda, Africa.

s/FRANK A. HAYES, *Correspondent.*

Illinois

Eastern Illinois Association.—The quarterly meeting of the Eastern Illinois V.M.A. was held at the Tilden-Hall Hotel, Champaign, on December 4. Dr. M. Mansfield, Simpson, reported on the veterinary activities at the Dixon Springs Experiment Station in Robbs.

Newly elected officers are: Drs. Earl E. Lutz, Champaign, president; William L. Hay, Piper City, president-elect; and E. I. Pilchard, Champaign, secretary-treasurer.

s/E. I. PILCHARD, *Secretary-Treasurer.*

Iowa

Midwest Small Animal Association in Joint Meeting.—Dr. C. L. McGinnis, Peoria, Ill., served as program chairman of the two-day regional meeting of the Midwest Small Animal Association and the American Animal Hospital Association held in Burlington, November 12-13. More than 100 veterinarians attended this joint meeting.

Newly elected officers are: Drs. Robert H. Gump, Wichita, Kan., president; Eugene B. Ingmand, Red Oak, vice-president; and J. Porter Coble, Springfield, Ill., was reelected secretary-treasurer. Dr. Jack Dinsmore, Glenview, Ill., was elected trustee; Dr. Richard B. Koger, Joplin, Mo., has one more year to serve as trustee.

Included on the program were: P. M. Bauman, parasitologist, Abbott Laboratories, North Chicago, Ill.—heartworms; Dr. Fred Stutte M.D.—orthopedics; and Dr. Myron Bernstein, Glencoe, Ill.—radiation hazards.

s/GRANT B. MUNGER, *Correspondent.*

Kansas

Dr. Ogilvie Honored.—Dr. Fred B. Ogilvie (KSC '43) has the distinction of being one of the 52 community leaders of Kansas City whose biographies were compiled recently by the newspaper, *The Kansas City Kansan*, and published in its first volume of "Kansas City Kansas Profiles" as a source of "inspiration to the leaders of tomorrow." Representing small animal practice, Dr. Ogilvie is a member of the AVMA's Council on Education.

Michigan

Dr. Quinn Appointed State Veterinarian.—Dr. John F. Quinn (MSC '43), 37, of Portland, became chief of the Michigan Department of Agriculture's active Livestock Disease Control Division, assuming his duties January 1. He succeeded Dr. Lee Davisson (see p. 199).

Employed by the Department for eight years, Dr. Quinn previously had practiced at Three



Dr. John F. Quinn

Oaks and at Pigeon, Mich. In state service, he had held the post of institutional veterinarian. Since 1937, he has been in charge of the Division's law enforcement work which concerns livestock auctions and the regulation of livestock movements.

Dr. Quinn's responsibilities include the continuation and advancement of the state's livestock disease control programs. Michigan has as its goal complete eradication of brucellosis by 1960; reduction of the incidence of tuberculosis—toward complete eradication of the disease; and work on the diagnosis and control of leptospirosis.

s/JOE E. WELLS, *Administrative Assistant.*

Dr. Davisson Retires as State Veterinarian.—Head of Michigan's Livestock Disease Control Division since 1949, Dr. Lee Davisson (CVC '10) retired December 31, having served the state's livestock industry a total of 48 years.



Dr. Lee Davisson

After graduation, Dr. Davisson practiced a year in Chicago before moving to Michigan and establishing a practice in Manchester. In 1918, he was commissioned as a veterinarian in the U.S. Army and served with the A. E. F. in France.

From 1919 to 1938, he not only maintained a practice but also was deputy sheriff in Washtenaw County. In 1938, he accepted a full-time commission as a veterinary livestock inspector with the Michigan Department of Agriculture. During his tenure, the livestock disease control division has more than doubled in size and Michigan became a modified certified brucellosis-free area.

Dr. Davisson has been a member of the AVMA since 1950.

Nebraska

State Association Holds Meeting.—The Nebraska V.M.A. held its annual meeting at the Hotel Cornhusker in Lincoln, Dec. 3-5, 1958. New officers elected include: Drs. Charles B. Schwab, Fairbury, president; Rex W. Emery, Gering, vice-president; and Ordella Geisler, Lincoln, secretary-treasurer.

Drs. Louis K. Otto, Arlington, and Robert S. Nootz, Kearney, were appointed directors and Robert Garey, Hastings, was employed as executive-secretary of the Association. Dr. Eugene W. Peck, Auburn, was again appointed delegate to the AVMA with Dr. Clair M. Hibbs, David City, as alternate.

The scientific program included: surgical problems in horses and cattle by Dr. F. J. Milne, Guelph, Ont.; small animal surgery by Dr. William V. Lumb, East Lansing, Mich.; and leptospirosis in domestic animals by Dr. A. H. Quin, Kansas City, Mo.

Among the other speakers and subjects on the program were: Drs. Lew Harris, Lincoln—endocrinology; William D. Carlson, Colorado State University—radiology; W. J. Kilpatrick, Mediapolis, Iowa—economics and management; George Young, University of Nebraska,—pneumonia in swine; Earl Baldwin, Omaha—clostridial enterotoxemias; and H. W. Rueber, Oklahoma State University—nutrition in range cattle. Mr. Brian Forster, AVMA director of public information, spoke on the "AVMA in Action."

Pennsylvania

Women's Auxiliary.—The annual meeting of the Women's Auxiliary to the Pennsylvania V.M.A. was held last October in the Pocono Manor Inn, Pocono Manor, Pa.

In addition to the contributions to the AVMA Research Fund, Student Loan Fund, and the Senior Student Award, a new Student Loan Fund, amounting to \$250.00, was made available for the 1958-1959 school term at the University of Pennsylvania. It will be administered on the same terms as the AVMA Student Loan Fund.

Several revisions were made in the Auxiliary's constitution and bylaws and the new office of membership-secretary was created. The Auxiliary's total membership is 208.

The roster of officers for the ensuing year is: Mrs. David Rice, Warren, president; Mrs. John Stefanick, Sharon, president-elect; Mrs. F. J.



Left to right—Mrs. R. C. Guise, secretary; Mrs. R. C. Snyder, immediate past-president; Mrs. Ernest Stearly; Mrs. Samuel Scheidy, membership-secretary; and Mrs. David Rice, president.

Cavanaugh, Quakertown, treasurer; Mrs. R. C. Guise, Harrisburg, secretary; Mrs. S. F. Scheidy, Bryn Mawr, membership secretary; Mrs. Samuel Rice, Sharpsville, delegate; and Mrs. E. Stanley Stone, Waverly, alternate.

S/LOIS M. GUISE, Secretary.

DEATHS

Star indicates member of AVMA

H. R. Bement (CVC '20), 70, Orfordville, Wis., died Dec. 1, 1958. He had practiced in Orfordville for 35 years.

★**Glen Biddle** (ONT '10), 69, Bryan, Ohio, a practicing veterinarian in Bryan for 46 years, died Dec. 1, 1958, after a two-year illness. He had undergone surgery the day before his death.

In 1933, Dr. Biddle and two other Bryan men organized the Williams County Horse Breeder's Association, serving as its secretary and staging the Bryan Horse Show for many years. The Association disbanded in 1940, when interest in horses was on a decline. Dr. Biddle was once offered the position as State Veterinarian in Columbus.

★**Wilfred H. Erwin** (ONT '97, MSC '03), 82, Howell, Mich., died at the McPherson Health Center, Nov. 24, 1958, after a long illness. He had practiced in Howell for 60 years.

★**Ernest Erwin Flory** (KSC '11), 73, Aberdeen, S. Dak., a life-member of the AVMA since 1956, died Dec. 22, 1958.

Dr. Flory was an accredited veterinarian with the Animal Disease Eradication Division of the U.S.D.A. until his retirement from federal service. He had recently been employed by the South Dakota Livestock Sanitary Board.

★**Joseph Clement Luckeroth** (STJ '21), 60, Seneca, Kan., a well known general practitioner in Northeastern Kansas for 38 years, died Dec. 8, 1958, after a heart attack.

Dr. Luckeroth was actively engaged in practice up until the time of his death. Survivors include his widow, three daughters, and three sons, one of whom is also a veterinarian, Norman A. (KSC '54).

★**Lee Manard** (ONT '96), 87, Arkansas City, Kan., who had traveled through Indian Territory in a medicine wagon caring for both man and beast, died in an Arkansas City hospital, Nov. 24, 1958. In the early days, the sides of Dr. Manard's wagon bore the inscription, "Dr. L. Manard, Veterinarian, Surgeon, and Dentist."

Numbered among his friends were William F. (Buffalo Bill) Cody, Will Rogers, and the latter's father, Bill Rogers. Dr. Manard retired from practice in 1925.

★**Frank Morrow** (ONT '90), 98, former Oneida, N.Y., resident, died at his home in

Bridgeport, Conn., Nov. 25, 1958. Originally from Canada, Dr. Morrow had practiced more than 50 years in Central New York state.

★**William Herbert Potts** (KCV '17), Mt. Olive, N. Car., died at his home, Nov. 22, 1958, following a heart attack. For many years, he was associated with the Wayne County Health Department as well as maintaining a private practice in Mt. Olive. Dr. Potts retired from practice five years ago.

In addition to farming interests, Dr. Potts was an ardent foxhunter and a member of the North Carolina V.M.A.

★**Thomas E. Quincy** (MCK '18), 84, formerly of Chicago, Ill., died in a Rutland, Vt., hospital after a brief illness. He had been living at the home of a niece, Mrs. Arthur Seward, for the past year.

Prior to his retirement from government service, Dr. Quincy had been engaged in meat inspection in Chicago for many years.

★**Joseph E. Schneider** (OSU '17), 67, Drexel Hill, Pa., died Dec. 18, 1958. Dr. Schneider was a former director of the veterinary biological laboratories at Sharp & Dohme in Glenolden, Pa.

★**Glenn H. Scoville** (GR '06), 76, Springfield, Mo., died Nov. 4, 1958, in the Burge Hospital, after a long illness. He had been a life-member of the AVMA since 1953.

Having practiced in Clarksville, Mich., for 42 years, Dr. Scoville moved to Springfield upon his retirement in 1948.

★**Russell Smiley**, 76, Fairview, Okla., died Dec. 3, 1958. He had been in failing health for several years. Dr. Smiley had practiced in Fairview since 1908.

★**Henry Stanley Weber** (MCK '08), 75, Lancaster, Pa., a life-member of the AVMA since 1954, died in his home Dec. 8, 1958, following a prolonged illness.

He had been in federal government service for 45 years. Before his retirement in 1953, Dr. Weber was in charge of the Lancaster Union Stock Yards for 30 years.

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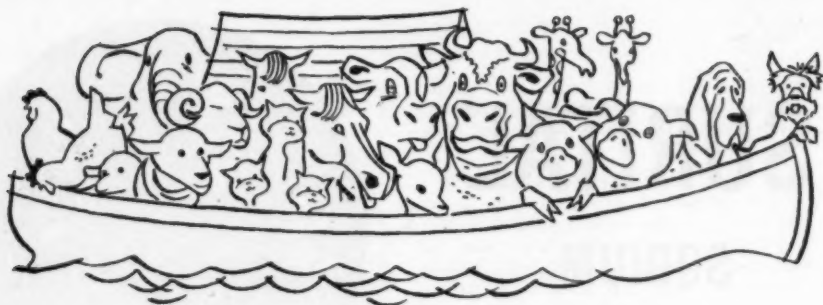
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AVMA Officials Attend Washington Meeting

Dr. R. E. Rebrassier, AVMA president, attended a meeting in Washington, D. C., late in November, 1958, sponsored by the Department of Health, Education, and Welfare. Representatives of 76 national organizations were brought together to discuss (1) suggestions for more fruitful relationships between the Department and national health organizations, and (2) health trends and other problems of national importance, including: research and manpower needs, methods of achieving rapid application of knowledge for disease control, and health information and educational needs.

It was indicated that more U.S. Public Health Service research grants should be allotted to paramedical groups such as veterinarians, who are well qualified to conduct research for many phases of health.

The representatives requested the Department to make grants for teaching purposes as well as for research.

Dr. S. F. Scheidy, AVMA president-elect, attended similar meetings in Washington on Dec. 17-18 where such topics as color additives, advertising of foodstuffs and drugs, and functions of Federal Food and Drug Administration were discussed.

The rapidly increasing use of potent drugs in manufactured feeds has brought about increased federal regulation of feed manufacturers. Since medicated feeds are considered drugs, they must be shown safe not only for the animals to which they are fed, but also for human consumption of any food products to be derived from those animals.

The Federal Food, Drug, and Cosmetic Act of 1938 was amended by an act signed by the President on Sept. 6, 1958. The original law left it up to the Food and Drug Administration to discover the safety of food additives and to make tests to prove them "poisonous or deleterious" before they could be removed from the market. The new act requires the promoter of food additives to establish their safety before marketing.

WOMEN'S AUXILIARY

President—Mrs. E. A. Woelffer, 115 Woodland Lane, Oconomowoc, Wis.
Secretary—Mrs. A. W. Eivers, 1745 S. 13th St., Salem, Ore.

Why Belong to the Women's Auxiliary?

This is a subject with so many potentialities that space will be taken only for a few of them. Belonging to the Women's Auxiliary on both local and national levels is a general support to the veterinary profession. It brings about national and international friendships, helps to solve mutual problems, and creates interest contributing to the greater prestige of our own activities, which are directed to the good of our husbands' profession.

Due to our present competitive way of life, a vital public relations program is essential. It is suggested that the national organization pool any usable funds drawn from all local auxiliary

groups to provide monetary backing for the legislation needed to protect and better the functions of the veterinary profession and improve our stature in the public eye.

If all of the wives would join us with this thought in mind, many of our professional desires would be accomplished. We need the strength of numbers; no one person, nor any one small local group, can attain our goals by working alone.

We know that the veterinarian's work is significant in the field of public health. We women can aid in featuring his role in the public health program through the dissemination of information obtained from our husbands, pointing out the protection from disease offered by inspection of meats, milk from tested cattle, and other safety health measures which the veterinarian fosters.

We can encourage deserving students to use our loan fund facilities so that they may complete their academic training. Where possible, our local auxiliaries should contribute to this fund as well as the research fund, and we must promote this phase of the work.

We can help prove to the public that the veterinarian has business ability as well as professional ability, and that he has risen above the old "horse doctor" era. We must join our national auxiliary. Each of our local auxiliaries can be a spoke in the wheel of progress. Won't you help—and thus help yourself and your husband?

s/Mrs. E. R. DERFLINGER, *Chairman, Membership Advisory Committee.*



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COMING MEETINGS

Notices of coming meetings must be received 30 days before date of publication.

Illinois State Veterinary Medical Association. Annual meeting. LaSalle Hotel, Chicago, Feb. 16-18, 1959. C. B. Hostetler, 1385 Whitcomb Ave., Des Plaines, executive secretary.

Indiana Veterinary Medical Association and Vita Vet Laboratories. Annual nutrition conference for veterinarians. Public Health Building, Indianapolis, Ind., Feb. 25, 1959. J. M. Carter, chairman.

Alabama Veterinary Medical Association. Fifty-second annual meeting. Houston Hotel, Dothan, Ala., March 15-17, 1959. M. K. Heath, secretary.

New Jersey, Veterinary Medical Association of. Diamond jubilee meeting. Princeton Inn, Princeton, N. J., April 8-9, 1959. John R. McCoy, Rutgers University, New Brunswick, secretary.

Oklahoma State University. Annual Oklahoma conference for veterinarians. College of Veterinary Medicine, Campus Veterinary Medical Center, April 13-14, 1959. John H. Venable, steering committee chairman.

Pennsylvania, University of. Fifty-ninth annual conference of veterinarians. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, April 28-29, 1959. Mark W. Allam, dean.

Third Pan American Congress of Veterinary Medicine and Ninety-Sixth Annual Meeting, American Veterinary Medical Association. Joint meeting. Kansas City, Mo., Aug. 23-27, 1959. H. E. Kingman, Jr., executive-secretary, AVMA, 600 S. Michigan Ave., Chicago 5, Ill. B. D. Blood, secretary-general, Directing Council, Pan American Congress of Veterinary Medicine, P.O. Box 99, Azul, F.C.N.G.R., Argentina, S.A.

Missouri Veterinary Medical Association. Winter meeting. Hotel Statler, St. Louis, Feb. 26-28, 1959. Paul L. Spencer, P.O. Box 283, Jefferson City, Mo., secretary.

Foreign Meetings

International Veterinary Congress. Sixteenth session. Madrid, Spain, May 21-27, 1959. Prof. Pedro Carda A., general secretary, Calle Villanueva 11, Madrid.

U.S. COMMITTEE: Dr. W. A. Hagan, chairman, New York State Veterinary College, Ithaca, N. Y.; Dr. J. G. Hardenbergh, secretary, 600 S. Michigan Ave., Chicago 5, Ill.

Third World Congress on Fertility and Sterility. Amsterdam, Holland, June 7-13, 1959. Dr. L. I. Swaab, Sint Agnietenstraat 4, Amsterdam, Holland, honorary secretary.

Regularly Scheduled Meetings

ALABAMA—Central Alabama Veterinary Medical Association, the first Thursday of each month. Capt. Joe T. Williams, Qtrs. 931-C, Maxwell A.F.B., Ala., secretary.

Jefferson County Veterinary Medical Association, the second Thursday of each month. Dan P. Griswold, Jr., 714 S. 39th St., Birmingham, secretary.

Mobile-Baldwin Counties Veterinary Medical Association, the third Tuesday of each month. W. David Gross, 771 Holcombe Ave., Mobile, Ala., secretary.

North Alabama Veterinary Medical Association, the second Thursday of November, January, March, May, July,

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and September, in Decatur, Ala. Ray A. Ashwander, P.O. Box 1767, Decatur, Ala., secretary.

Northeast Alabama Veterinary Medical Association, the second Tuesday of every other month. Leonard J. Hill, P.O. Box 761, Gadsden, Ala., secretary-treasurer.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month. J. W. Langley, Jr., P.O. Box 5013, Phoenix, Ariz., secretary.

Southern Arizona Veterinary Medical Association, the third Wednesday of each month at 7:30 p.m. Gwyn Chapin, 2215 E. Calle Vista, Tucson, Ariz., secretary.

ARKANSAS—Pulaski County Veterinary Medical Society, the second Tuesday of each month. Harvie R. Ellis, 54 Belmont Drive, Little Rock, Ark., secretary-treasurer.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the fourth Wednesday of Jan., March, May, June, Aug., Oct., and Nov. John S. Blackard, 420 Appian Way, Richmond, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Herb Warren, 3004 16th St., San Francisco, Calif., executive secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Paul S. Chaffee, 2333 McKinley Ave., Fresno, Calif., secretary.

Kern County Veterinary Medical Association, the first Thursday evening of each month. Norman E. Cunningham, 2703 "M" St., Bakersfield, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. W. H. Rockey, P.O. Box 121, San Luis Obispo, Calif., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. V. Todorovic, 47 Mann Ave., Watsonville, Calif., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month at the Hotel Covell, in Modesto, Calif. T. J. Carleton, 325 W. Lockeford St., Lodi, Calif., secretary-treasurer.

Orange Belt Veterinary Medical Association, the second Monday of each month. Robert Lapiam, 1194 W. Highland Ave., San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, the third Thursday of each month. H. M. Stanton, 1122 S.E. U.S. Highway 101, Tustin, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. Robert Lawson, Los Altos, Calif., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. Robert E. Clark, 2075 Silverado Trail, Napa, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. R. A. Mueller, 6420 Freeport Blvd., Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. E. P. Bogart, P.O. Box 758, Vista, Calif., secretary.

San Fernando Valley Chapter SCVMA, the second Tuesday of each month at 7:30 p.m., Hody's Restaurant, North Hollywood, Calif. Dr. V. H. Austin, 14931 Oxnard St., Van Nuys, secretary-treasurer.

San Fernando Valley Veterinary Medical Association, the second Friday of each month at the Casa Escobar Restaurant in Studio City. John Chudacoff, 7912 Sepulveda Blvd., Van Nuys, Calif., secretary.

Santa Clara Valley Veterinary Medical Association, the fourth Tuesday of each month. Kay Bewley, 1410 N. 4th St., San Jose, Calif., secretary.

(Cont'd on adv. p. 36)

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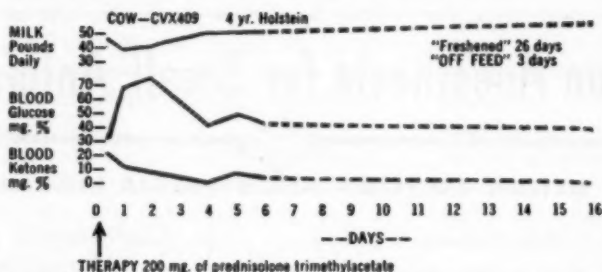
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References: 1. Vigue, R. F.: J.A.V.M.A. 133:326 (Sept. 15) 1958. 2. Shaw, J. C.: Personal communication. 3. Pollock, S.: To be published. 4. Rabin, P. H.: Personal communication. 5. Hoffer, S. H.: Personal communication. 6. Weir, H. T., and Hazeling, J. W.: Personal communication. 7. Buck, J. W.: Personal communication. 8. Bull, W. S.: Personal communication. 9. Fessenden, P. E.: Personal communication. 10. Lohmeyer, C.: Personal communication.

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Tulare County Veterinary Medical Association, the second Thursday of each month. Lionel H. Brazil, Route 4, Box 33, Tulare, Calif., secretary.

COLORADO—Denver Area Veterinary Medical Society, the fourth Tuesday of every month. Gene M. Bierhaus, 2896 S. Federal Blvd., Englewood, Colo., secretary-treasurer.

Northern Colorado Veterinary Medical Society, the first Wednesday of each month, in Fort Collins. Dr. James Voss, Veterinary Hospital, Colorado State University, Fort Collins, Colo., secretary.

DELAWARE—New Castle County Veterinary Medical Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. A. P. Mayer, Jr., R.F.D. 2, Newark, Del., secretary-treasurer.

DISTRICT OF COLUMBIA—District of Columbia Veterinary Medical Association, the second Tuesday evenings of January, March, May, and October. William I. Gay, 5200 Chandler St., Bethesda, Md., secretary-treasurer.

FLORIDA—Central Florida Veterinary Medical Association, the first Friday of each month at 8:00 p.m., place specified monthly. L. R. Poe, 753 W. Fairbanks Ave., Winter Park, Fla., secretary-treasurer.

Florida West Coast Veterinary Medical Association, the second Wednesday of each month at the Lighthouse Inn, St. Petersburg. Fred Jones, 3606 S. Dale Mabry, Tampa, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of every month. Dodson's Restaurant, Stephen C. Hite, 5807 105th St., Jacksonville 10, Fla., secretary.

Northwest Florida Veterinary Medical Society, third

Wednesday of each month, time and place specified monthly. John Webb, P.O. Box 183, Cantonment, Fla., secretary-treasurer.

Palm Beach Veterinary Society, the last Thursday of each month in the county office building at 810 Datura St., West Palm Beach. B. W. Bigger, 2833 S. 4th St., Fort Pierce, Fla., secretary.

Ridge Veterinary Medical Association, the fourth Thursday of each month in Bartow, Fla. John S. Haromy, Route #1, Box 107-A, Lake Wales, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month. Time and place specified monthly. Joe B. O'Quinn, 1690 E. 4th, Hialeah, Fla., secretary.

Suwannee Valley Veterinary Association, the fourth Tuesday of each month, Hotel Thomas, Gainesville. G. L. Burch, P.O. Box 405, Ocala, Fla., secretary-treasurer.

Volusia County Veterinary Medical Association, the fourth Thursday of each month. Robert E. Cope, 127 E. Mason, Daytona Beach, Fla., secretary.

GEORGIA—Atlanta Veterinary Medical Society, the third Thursday of each month at the Elk's Home, 726 Peachtree St., Atlanta. W. V. Smith, 1039 Marietta St., N.W., Atlanta, Ga., secretary.

Georgia-Carolina Veterinary Medical Association, the second Monday of each month at 8:00 p.m., at the Town Tavern, Augusta, Ga. H. G. Blalock, Jr., 2190 Highland Ave., Augusta, secretary.

South Georgia Veterinary Medical Association, the second Sunday of each quarter at 3:30 p.m., at the Radium Springs Hotel, Albany, Ga. M. W. Hale, Route 2, Tifton, Ga., secretary.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month. Charles H. Armstrong, 1021 Davis St., Evanston, secretary.

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the truck shipment of 56 untreated and 261 SPARINE-treated animals from a range in Oklahoma to a Colorado feed lot—an 18-hour trip. Cattle were weighed immediately prior to shipment and immediately upon arrival at the feed lot. Veterinarians observed that the SPARINE-treated animals were easier to handle, and began to feed more readily because they settled down without milling, fence walking and bawling.

ANIMALS SHIPPED 18 HOURS BY TRUCK	No. of cattle	Av. wt. prior to shipping	Av. wt. upon arrival	Av. lbs. lost	% of shrink
Untreated	30	345.5	325.89	19.8	5.6
	26	434.7	405	29.6	6.89
Treated with SPARINE, ½ mgm. /lb. body weight	73	349.6	340.25	9.25	2.6
	39	350.05	340	10.1	2.9
	4	488.25	467.5	21.25	4.3
	27	464	448	15.7	3.4
	59	447.3	434	13.5	3.01
	59	446.65	433.3	13.3	3.04

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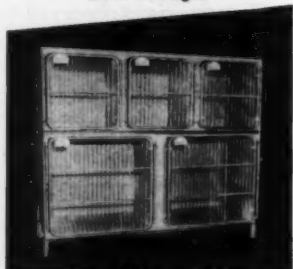
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Diamond Laboratories Appoints Biological Research Director

H. L. Hansen, general manager of Diamond Laboratories, Des Moines, Iowa, recently announced the appointment of Dr. Fred Zuschek as director of biological research for the firm.



Dr. Fred Zuschek

A graduate of Kent State University in Ohio and the University of Wisconsin, he holds a B. S. degree in chemistry, an M. S. in bacteriology, and a Ph. D. in bacteriology and biochemistry.

Before coming to Diamond, he was employed by Merck Sharp and Dohme, West Point, Pa., in the virus research division.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. E. I. Pilchard, Champaign, Ill., secretary-treasurer.

INDIANA—Central Indiana Veterinary Medical Association, the second Wednesday of each month. P. T. Parker, 224 N. Mill St., secretary-treasurer.

Michiana Veterinary Medical Association, the second Thursday of every month except July and December, at the Hotel LaSalle, South Bend, Ind. Stanton Williamson, 217 W. Chippewa St., South Bend, Ind., secretary.

Tenth District Veterinary Medical Association, the third Thursday of each month. J. S. Baker, P.O. Box 52, Pendleton, Ind., secretary.

IOWA—Cedar Valley Veterinary Medical Association, the second Monday of each month, except January, July, August, and October in Black's Tea Room, Waterloo, Iowa. A. J. Cotten, P.O. Box 183, Grundy Center, secretary.

Central Iowa Veterinary Medical Association, the third Monday of each month, except June, July, and August, at 6:30 p.m., Breeze House, Ankeny, Iowa. John Herrick, 202 S. Hazel Ave., Ames, secretary.

Coon Valley Veterinary Medical Association, the second Wednesday of each month, September through May, at 7:30 p.m., Cobblestone Inn, Storm Lake, Iowa. Robert McCutcheon, Holstein, secretary.

East Central Iowa Veterinary Medical Society, the Second Thursday of each month at 6:30 p.m., usually in Cedar Rapids, Iowa. T. F. Bartley, P.O. Box 454, Cedar Rapids, secretary.

Fayette County Veterinary Medical Association, the third Thursday of each month at 6:30 p.m. in West Union, Iowa. H. J. Morgan, West Union, secretary.

Lakes Veterinary Association, the first Tuesday of each month, September through May, at 6:30 p.m., at the Gardson Hotel, Estherville, Iowa. Barry Barnes, P.O. Box 162, Milford, secretary.

North Central Iowa Veterinary Medical Association, the third Thursday of April, at the Warden Hotel, Fort Dodge, Iowa. H. Engelbrecht, P. O. Box 797, Fort Dodge, secretary.

Northeast Iowa-Southern Minnesota Veterinary Association, the first Tuesday of February, May, August, and November at the Wisneslick Hotel, Decorah, Iowa, 6:30 p.m. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Northwest Iowa Veterinary Medical Association, the second Tuesday of February, May, September, and December, at the Community Bldg., Sheldon. W. Ver Meer Hull, secretary.

Southeastern Iowa Veterinary Association, the first Tuesday of each month at Mt. Pleasant, Iowa. Warren Kilpatrick, Mediapolis, secretary.

Southwestern Iowa Veterinary Medical Association, the first Tuesday of April and October, Hotel Chieftain, Council Bluffs, Iowa. J. P. Stream, 202 S. Stone St., Creston, secretary.

Upper Iowa Veterinary Medical Association, the third Tuesday of each month at 7:00 p.m., at All Vets Center, Clear Lake, Iowa. W. A. Danker, Dows, Iowa, secretary.



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KENTUCKY—Central Kentucky Veterinary Medical Association, the first Wednesday of each month. R. H. Folsom, P.O. Box 323, Danville, Ky., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday of each month in Louisville or within a radius of 50 miles, except January, May, and July. G. R. Comfort, 2102 Reynolds Lane, Louisville, Ky., secretary-treasurer.

MARYLAND—Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m., at the Park Plaza Hotel, Charles and Madison St., Baltimore,

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MICHIGAN—Central Michigan Veterinary Medical Association, the first Wednesday of every month at 7 p.m. Jerry Fries, 2070 E. Main St., Owosso, Mich., secretary.

Mid-State Veterinary Medical Association, the fourth Thursday of each month with the exception of November and December. Robert W. Acton, 4110 Spring Rd., Jackson, Mich.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. Alvin R. Conquest, P.O. Box 514, Grand Blanc, Mich., secretary.

Southeastern Michigan Veterinary Medical Association, the fourth Wednesday of every month, September through May. Louis J. Rossoni, 24531 Princeton Ave., Dearborn 8, Mich., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month (except July and August), at the Coronado Hotel, Lindell Blvd. and Spring Ave., St. Louis, Mo., at 8 p.m. Edwin E. Epstein, 4877 Natural Bridge Ave., St. Louis 15, Mo., secretary. Kansas City Veterinary Medical Association and Kansas City Small Animal Hospital Association, the third Thursday of each month at the Hotel President, Kansas City, Mo. Robert E. Guilfoil, 18 N. 2nd St., Kansas City 18, Kan., secretary.

NEVADA—Western Nevada Veterinary Society, the first Tuesday of each month. Paul S. Silva, 1170 Airport Road, Reno, Nev., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May at Old Hights Inn, Hightstown, N. J. David C. Tudor, R.D. 1, Box 284A, Cranbury, N. J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from October through April, except December, at the Irvington House, 925 Springfield Ave., Irvington, N.J. Bernard M. Weiner, 787 Clinton Ave., Newark, N.J., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday of each month at the Elks Club, Hackensack. James R. Tanzola, Upper Saddle River, N.J., secretary.

Northwest Jersey Veterinary Society, the third Wednesday of every odd month. G. L. Smith, P.O. Box 938, Trenton, N.J., secretary.

South New Jersey Veterinary Medical Association, the fourth Tuesday of each month at the Collmont Diner, Collingswood, N.J. Marvin Rothman, 718 Dwight Ave., Collingswood, N.J., secretary.

NEW MEXICO—Bernalillo County Veterinary Practitioners Association, third Wednesday of each month, Fex Club, Albuquerque, N.M. Jack Ambrose, 3018 N. Rio Grande Blvd., Albuquerque, secretary-treasurer.

NEW YORK—New York City, Inc., Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August. Irwin Bircher, 50 University Ave., Rochester, N. Y., secretary.

NORTH CAROLINA—Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel, Greensboro. C. G. Sims, 2450 Battleground Ave., Greensboro, N. Car., secretary.

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified

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monthly. Byron H. Brow, Box 453, Goldsboro, N. Car., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month. J. G. Martin, Boone, N. Car., secretary.

Twin Carolinas Veterinary Medical Association, the third Friday of each month at Orange Bowl Restaurant, Rockingham, N. Car., at 7:30 p.m. J. E. Currie, 690 N. Leak St., Southern Pines, N. Car., secretary.

Western North Carolina Veterinary Medical Association, the second Thursday of every month at 7:00 p.m. in the George Vanderbilt Hotel, Asheville, N. Car. Vili Lind, 346 State St., Marion, N. Car., secretary.

OHIO—Cincinnati Veterinary Medical Association, the third Tuesday of every month at Shuller's Wigwam, 6210 Hamilton Ave., at North Bend Road. G. C. Lewis, 451 E. Galbraith Rd., Cincinnati, Ohio, secretary-treasurer.

Columbus Academy of Veterinary Medicine, every month, September through May. E. M. Simonson, 3120 Valley View Dr., Columbus, Ohio, secretary-treasurer.

Cuyahoga County Veterinary Medical Association, the first Wednesday in September, October, December, February, March, April and May, at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. F. A. Coy, 8208 Carnegie Ave., Cleveland, Ohio, secretary.

Dayton Veterinary Medical Association, the third Tuesday of every month. O. W. Fallang, 6941 Far Hills Ave., Dayton, secretary.

Killbuck Valley Veterinary Medical Association, the first Wednesday of alternate months beginning with February. D. J. Kern, Killbuck, Ohio, secretary-treasurer.

Mahoning County Veterinary Medical Association, the fourth Tuesday of each month, at 9:00 p.m., Youngstown Maennerchor Club, Youngstown, Ohio. Sam Segall, 2935 Glenwood Ave., Youngstown, secretary.

Miami Valley Veterinary Medical Association, the first Wednesday of December, March, June, and September. J. M. Westfall, Greenville, Ohio, secretary-treasurer.

North Central Ohio Veterinary Medical Association, the last Wednesday of each month except during the summer. R. W. McClung, Tiffin, Ohio, secretary-treasurer.

Northwestern Ohio Veterinary Medical Association, the last Wednesday of March and July. C. S. Alvanos, 1693 W. Bancroft St., Toledo, Ohio, secretary-treasurer.

Stark County Veterinary Medical Association, the second Tuesday of every month, at McBrides Emerald Lounge, Canton, Ohio. M. L. Willen, 4423 Tuscarawas St., Canton, Ohio, secretary.

Summit County Veterinary Medical Association, the last Tuesday of every month (except June, July, and August), at the Mayflower Hotel, Akron, Ohio. M. L. Scott, 42 W. Market St., Akron, Ohio, secretary-treasurer.

Tri-County Veterinary Medical Association, the fourth Wednesday of January, May, and September. Mrs. R. Slusher, Mason, Ohio, secretary-treasurer.

OKLAHOMA—Oklahoma County Veterinary Medical Association, the second Wednesday of every month, 7:30 p.m., Patrick's Foods Cafe, 1016 N.W. 23rd St., Oklahoma City. Forest H. Stockton, 2716 S.W. 29th St., Oklahoma City, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month in Directors' Parlor of the Brookside State Bank, Tulsa, Okla. Arlen D. Hill, 5302 E. 11th St., Tulsa, Okla., secretary.

Tulsa Association of Small Animal Veterinarians, first and third Mondays, City-County Health Dept. T. E. Messler, 3104 E. 51st St., Tulsa, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the second Tuesday of each month, at 7:30 p.m. Ireland's

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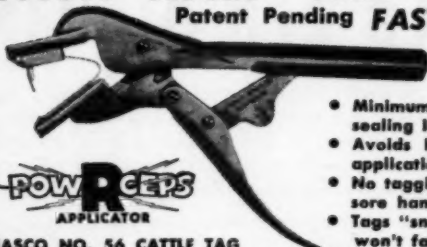
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Willamette Veterinary Medical Association, the third Tuesday of each month, except July and August, at the Marion Hotel, Salem. Robert J. Mallorie, P.O. Box 155, Silverton, Ore., secretary.

PENNSYLVANIA—Keystone Veterinary Medical Association, the fourth Wednesday of each month at the University of Pennsylvania School of Veterinary Medicine. Raymond C. Snyder, N.E. Corner 47th St. and Hazel Ave., Philadelphia 43, Pa., secretary.

Lehigh Valley Veterinary Medical Association, the first Thursday of each month. Stewart Rockwell, 10th and Chestnut Sts., Emmaus, Pa., secretary.

Pennsylvania Northern Tier Veterinary Medical Association, the third Wednesday of each odd numbered month. R. L. Michel, Troy, Pa., secretary.

SOUTH CAROLINA—Piedmont Veterinary Medical Association, the third Wednesday of each month at the Fairforest Hotel, Union, S. Car. Worth Lanier, York, S. Car., secretary.

Georgia-Carolina Veterinary Medical Association—see GEORGIA.

TEXAS—Coastal Bend Veterinary Association, the second Wednesday of each month. Jack E. Hahluetzel, Route 1, Box 65-N, Ingleside, Texas, secretary.

VIRGINIA—Central Virginia Veterinarians' Association, the third Thursday of each month at the William Byrd Hotel in Richmond at 8:00 p.m. M. R. Levy, 312 W. Cary Ct., Richmond 20, Va., secretary.

Northern Virginia Veterinary Conference Association, the second Tuesday of each month. T. P. Koudelka, P.O. Box 694, Harrisonburg, Va., secretary.

Northern Virginia Veterinary Society, the second Wednesday of every third month. Meeting place announced by letter. H. C. Newman, Box 145, Merrifield, secretary.

Southwestern Virginia Veterinary Medical Association, the first Thursday of each month. D. F. Watson, Blacksburg, secretary.

WASHINGTON—Seattle Veterinary Medical Association, the third Monday of each month, Magnolia American Legion Hall, 2870 32nd W., Seattle. Roy C. Toole, 10415 Main St., Bellevue, secretary.

South Puget Sound Veterinary Association, the second Thursday of each month except July and August. B. D. Benedictson, 3712 Plummer St., Olympia, Wash., secretary.

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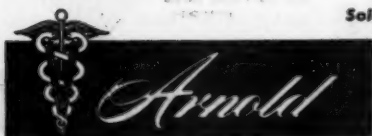
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WEST VIRGINIA—Kyowva (Ky., Ohio, W. Va.) Veterinary Medical Association, the third Thursday of each month in the Hotel Pritchard, Huntington, W. Va., at 8:30 p.m. Harry J. Fallon, 200 5th St., W. Huntington, W. Va., secretary.

WISCONSIN—Central Wisconsin Veterinary Medical Association, the second Tuesday of each quarter (March, June, Sept., Dec.) C. R. Carlson, 1109 E. LaSalle Ave., Barren, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month. Dr. E. P. Pope, 409 Farley Ave., Madison, Wis., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. Dr. R. H. Steinkraus, 7701 N. 59th St., Milwaukee, Wis., secretary.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday in April. William Madison, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month. L. C. Allenstein, 209 S. Taft St., Whitewater, Wis., secretary.

Southeastern Veterinary Medical Association, the third Thursday of each month. John R. Curtis, 419 Cook St., Portage, Wis., secretary.

Wisconsin Valley Veterinary Medical Association, the second Tuesday of every other month. John B. Fleming, 209 E. 4th St., Marshfield, Wis., secretary.

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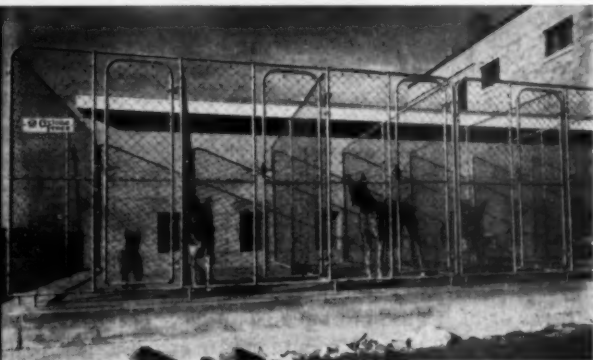
laws. The committee stated that anyone who believes in small business "could not look with favor on integration."—*Successful Farm.* (Nov., 1958): 14.

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Veterinary Catalog!

for calf scours (enteritis)

ENTEUFUR[®] bolus veterinary, small



*bactericidal action
promptly controls
symptoms in
93-95%^{1,2} of calves
no development of
resistant bacterial
strains or of
cross-resistance*

Remissions of calf scours following treatment with ENTEUFUR have been of a dramatic nature and uniformly high. In widespread field tests, cure rates of 93% and 95% have been obtained.^{1,2}

ENTEUFUR is a bolus containing the new antibacterial nitrofurans, FURAMAZONE[®] (brand of nifuraldezone) 1 Gm., and bismuth subsalicylate 0.26 Gm. for its mildly astringent, anti-diarrheal action. FURAMAZONE is a new nitrofurans selected for its specific bactericidal activity against gram-negative and gram-positive enteric bacteria, including the virulent strains of *E. coli* found in calf enteritis.

ENTEUFUR is nontoxic even when administered in doses well above therapeutic levels.

Dosage: 1 bolus perorally, twice daily, for 2 or 3 days.

Supplied: Boluses of 3.3 Gm. each, in box of 24.

1. Osborne, J. C. in *New Horizons in Chemotherapy. Proceedings of First Regional Conference on the Nitrofurans in Veterinary Medicine*. In press.

2. Bull, W. S.: *N. Amer. Vet.* 38: 3 (Jan.) 1957.

Available through your professional veterinary distributor

NITROFURANS—a new class of antimicrobials—
neither antibiotics nor sulfonamides

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for retained placenta

FUREA[®] *bolus veterinary*



FUREA effectively combats the dangers that arise in bovine retained placenta by a 2-way action:

1) *bactericidal*, even in the presence of pus, blood and serum, and 2) *proteolytic* for resolving necrotic tissue.

Clinical usage produced a rapid decrease in signs of infection, reduction or elimination of malodor, and unimpaired fertility in over 90% of treated cows.

FUREA is an intrauterine bolus containing FURACIN[®] (brand of nitrofurazone) 0.12 Gm. and urea 12 Gm. The bolus disintegrates swiftly in uterine fluids, providing rapid and uniform distribution of active ingredients to the affected tissues. It is nonirritating and nontoxic.

Dosage: Two boluses inserted into the recently pregnant horn. One bolus may be placed in the nonpregnant horn. Repeat at 24-hour intervals, as necessary.

Supplied: Bottle of 25 boluses.

1. Jones, S. V.; Belloff, G. B., and Roberts, H. D. B.: Vet. Med. 51:413 (Sept.) 1956.

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NITROFURANS—a new class of antimicrobials—
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EATON LABORATORIES, NORWICH, NEW YORK

*prevention of
uterine infection—
early restoration of
fertility in over 90%
of treated cows¹*



COMMONWEALTH OF AUSTRALIA

Commonwealth Scientific and Industrial Research Organization Division of Animal Health and Production

Appointment of Senior Veterinary Bacteriologist and Immunologist

Applications are invited for appointment to a position of Senior Veterinary Bacteriologist and Immunologist at the Organization's Animal Health Research Laboratory, Parkville, Victoria.

The successful applicant will lead a well-established Section which has already contributed extensively to knowledge of contagious bovine pleuro-pneumonia. Previous experience with this disease would be highly advantageous, but other research experience based on a sound knowledge of bacteriology, immunology and pathology would be adequate.

The Laboratory has excellent facilities and close association with the University of Melbourne which is nearby. Susceptible cattle of known history are available locally and findings can be tested in Northern Australia where the disease is enzootic.

A settling-in period with the present leader of the Section, a world-authority on bovine contagious pleuro-pneumonia, will be arranged before full direction is assumed. Research and technical members of the section are all experienced workers and studies on the causal organism are being made by an associated research group investigating microbial metabolism. The combined results of the investigations are not only of importance in the study and control of bovine pleuro-pneumonia, but also for the understanding of the pleuro-pneumonia-like organisms group and some of the diseases of man and animals in which they are implicated.

Field stations to hold cattle are conveniently situated, and further extensions of laboratory and field accommodation are planned.

Applicants should possess a University degree in Veterinary Science or an equivalent veterinary qualification, together with considerable experience of the kind mentioned above.

Commencing salary will be determined according to qualifications and experience and will be within the salary range of Principal Research Officer £2556-2996 p.a., or Senior Principal Research Officer £3106-3563 p.a.

The appointment will be conditional upon a satisfactory medical examination and an initial probationary period of up to twelve months may also be specified. Confirmation of appointment carries with it Commonwealth Superannuation Fund or Commonwealth Provident Account privileges.

Fares to Australia, including those of wife and dependent family will be provided by the Organization. Details may be discussed with the undersigned.

Applications quoting reference number 201/148 and stating full name, place, date and year of birth, nationality, marital state, present employment, particulars of qualifications and experience, and of war service if any, together with the names of not more than four persons acquainted with the applicant's academic and professional standing, should reach the Officer-in-Charge, Animal Health Research Laboratory, C.S.I.R.O. Cnr. Flemington Road and Park Street, Parkville, N.2, Victoria by 21st Feb. 1959.

G. B. Gresford
RESEARCH SECRETARY

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15th of month issue — 22nd of month preceding date of issue.

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Wanted—Veterinarians

Assistant wanted for small animal practice in Long Island, N.Y. Please state age, experience, college and year graduated, salary desired, marital status, three references. Address "Box A 19," c/o JOURNAL of the AVMA.

Relief veterinarian wanted to take over complete charge of small animal hospital during my vacation after February 15. Must have Maryland license; hospital located near Baltimore. Address "Box B 2," c/o JOURNAL of the AVMA.

Veterinarian to assist small animal practice; Virginia license required. In letter, state pertinent facts such as age, ability, experience, availability. Bonus arrangement. Address "Box B 6," c/o JOURNAL of the AVMA.

Relief veterinarian to operate small animal practice in Philadelphia, Pa., for month of August. Apartment available. Address "Box B 11," c/o JOURNAL of the AVMA.

Position available—veterinarian desired as an associate in an expanding small and large animal practice 20 miles south of Chicago. Associate will be in complete charge. A guaranteed minimum income of \$5,000 yearly is provided for in the working agreement, plus a percentage clause whereby income potentialities are unlimited. All instruments, medicines, and car operating expenses, etc. are furnished by the business, so need only have own car. Position available after Feb. 1, 1959. Address "Box B 17," c/o JOURNAL of the AVMA.

R & D Coordinator—D.V.M., background in nutrition, to coordinate new product R & D program for national manufacturer of feed additives. Must have full knowledge of drugs, medicaments, etc. used for poultry and animal growth and health. Travel required in contacting universities, agricultural experiment stations, etc. Qualified to screen new products, plan laboratory and field test programs, analyze and evaluate results. Address "Box B 27," c/o JOURNAL of the AVMA.

Veterinarian wanted—veterinarian for staff of large hospital for small animals in New York City. New York license required. Opportunity. Address "Box B 32," c/o JOURNAL of the AVMA.

Veterinarian to assist in small animal hospital in Chicago. Good opportunity. Address "Box B 33," c/o JOURNAL of the AVMA.

Man or woman—New York licensed, for small animal hospital, Capitol District area, wanted immediately. Address "Box B 34," c/o JOURNAL of the AVMA.

Veterinarian, New York license, for small animal practice, A.A.H.A.-approved hospital, in New York. Excellent working conditions. Address "Box B 38," c/o JOURNAL of the AVMA.

Wanted—chemist or pharmacist experienced in veterinary pharmaceutical production in small but nationally-established business. State experience, age, and qualifications. Address "Box B 39," c/o JOURNAL of the AVMA.

Veterinarian as assistant in progressive, well-equipped small animal hospital. Well staffed with lay personnel; advancement opportunities; Ohio. State age, marital status, school, year of graduation. Address "Box B 40," c/o JOURNAL of the AVMA.

Wanted—veterinarian or graduating senior to take over mostly large animal practice as associate or owner in a town of 3,000 in rich farming community in Central States. Give age, marital status, complete history including name of a former employer, availability, salary and commission acceptable, in reply. Address "Box B 41," c/o JOURNAL of the AVMA.

Veterinarian wanted—Missouri-licensed for A.A.-H.A. hospital. State all particulars in first letter. Address "Box B 42," c/o JOURNAL of the AVMA.

Wanted—Positions

Relief veterinarian available, New York and New Jersey licenses, small animals only. Address D.V.M., 1007 80th St., North Bergen, N.J.

Graduate (TEX '55) interested in position leading to purchase or partnership in established small animal practice. Reasonable amount of capital available. Address "Box B 18," c/o JOURNAL of the AVMA.

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Married, veteran, desires position leading to partnership or lease leading to ownership with established general practitioner in Nebraska, Kansas, or Missouri. Licensed, experienced. Address "Box B 31," c/o JOURNAL of the AVMA.

Pennsylvania graduate ('55), experienced, married, desires position in progressive small animal hospital. Licensed in Pennsylvania, New Jersey, and

CALIFORNIA STATE VETERINARY POSITIONS

Excellent opportunities in California state government for graduate veterinarians with or without experience in practice. Salary range \$530-\$644. Senior veterinary students eligible to apply before graduation. Write at once for further information.

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For sale or lease—small animal hospital and boarding facilities. Equipped with 80 indoor cages and 50 outdoor runs. Fine location in city of New Orleans; ideal year 'round climate. Experienced, progressive man is a must. Address "Box B 3," c/o JOURNAL of the AVMA.

Fast growing general practice with residence in Ohio. Real estate value; lease considered; perfect for young couple. Address "Box B 13," c/o JOURNAL of the AVMA.

Chicago area—small animal practice for sale with modern diagnostic equipment. No real estate, price: \$12,500. Address "Box B 28," c/o JOURNAL of the AVMA.

Established mixed practice in prosperous Virginia community. Reasonable price includes fully-equipped ranch styled small animal hospital and apartment, air-conditioning, 2-way radios, etc. Easy terms. Address "Box B 29," c/o JOURNAL of the AVMA.

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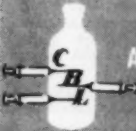
Stolen—small brown French Poodle, female, tattoo No. 08732 on ear, from around vicinity of Glen Hotel, Newport, Ky., December 10th or 11th. Liberal reward. Address Leo Dryer, 366 Madison Ave., New York 17, N.Y.

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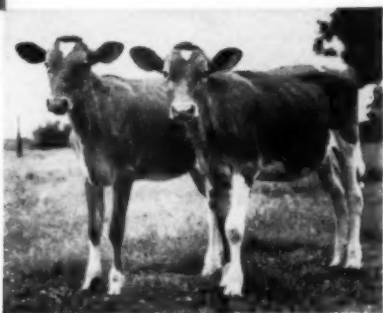
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